The IRON AGE

August 27, 1959 A Chilton Publication The National Metalworking Weekly

A Marketing Team at The Budd Co.—

"Marketing Concept" Helps Launch New Products P. 57

The U. S. Stockpile:
An $8 Billion Question – P. 43

Roll Precision Rings
From Low-Cost Billets – P. 79

Digest of the Week – P. 2-3

Aristoloy leaded user reports 25% reduction in time required to cut worm gear threads

Cutting threads on worm gears is an expensive, time consuming operation. Geometry is critical and a considerable amount of metal must be removed. One of the large manufacturers of "worms," desiring to increase production, found that by switching to a *leaded* steel* he could increase both speeds and feeds. Equally important, expensive cutting tools lasted longer because of the freer machining characteristics of leaded steel—delivering more pieces between grinds, and drastically reducing down-time for tool changes.

Strength and hardness tests on the finished part, after heat treating, indicated no detectable difference in physical properties from unleaded grades previously used.

For complete information about Aristoloy leaded or standard analyses carbon, alloy, and stainless grades, write for booklet entitled, "A Complete Line of Leaded Steels," and new Products & Facilities Catalog. *Inland Ledloy License

ARISTOLOY STEELS

COPPERWELD STEEL COMPANY

ARISTOLOY STEEL DIVISION • 4001 Mahoning Ave., Warren, Ohio • EXPORT: Copperweld Steel International Co., 225 Broadway, New York 7, N. Y.

FINISH-GRINDING a 22-ton hardened steel roll for rolling aluminum. Overall length: 231 in. Diameter 34¼ in.

The finish must be perfect on this hardened steel roll

This Bethlehem machinist is finish-grinding the surface of this roll with utmost care. His intense concentration is nothing unusual; every Bethlehem roll is ground and polished with such care. When he completes this operation, the customer can be confident his specifications on finish have been met *exactly*.

Bethlehem pays the same careful attention to meeting customer specifications on hardness and dimensions. Every step in making a forged roll—from melting the steel to inspecting the finished product—is carefully checked, and then, just as carefully, double-checked. No roll is released until every technician on the job is completely satisfied.

When next in the market for forged rolls, why not check with us first? We make them in all sizes, and for every application: cold-rolling ferrous sheets and strip; running-down and finishing operations on copper and brass sheets; hot- and cold-rolling aluminum sheets; cold-rolling aluminum foil. Our prices and deliveries are fully competitive. Our nearest sales office can give you full details.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

Export distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

THE IRON AGE
Chestnut and 56th Sts.
Philadelphia 39, Pa., SH 8-2000

GEORGE T. HOOK, Publisher

EDITORIAL STAFF

TOM C. CAMPBELL, Editor-in-Chief
GEORGE F. SULLIVAN, Editor

Managing Editor — E. C. Beaudet
News-Markets Editor — R. D. Raddant
Asst. News-Mkts. Editor — H. R. Neal
Technical Editor — J. J. Obrzut
Machinery Editor — E. J. Egan, Jr.
Engineering Editor — R. H. Eshelman
Metallurgical Editor — C. L. Kobrin
Art Director — T. S. Peaby

Associate Editors: F. J. Starin, P. J. Cathey, F. T. P. Plimpton, Jr., R. R. Irving. Assistant Editor: R. S. Cowperthwaite, Jr. Regional Editors: K. W. Bennett, Chicago; T. M. Rohan, Cleveland; A. E. Fleming, Detroit; G. G. Carr, New York; R. R. Kay, Los Angeles; G. J. McManus, Pittsburgh; G. H. Baker, R. M. Stroupe, N. R. Regeimbal, Washington. Correspondents: F. L. Allen, Birmingham; N. Levenson, Boston; R. E. Koebbe, St. Louis; J. Miller, San Francisco; R. Kazarian, Buffalo; D. R. Coughlin, Seattle; A. T. Collins, Houston; F. Sanderson, Toronto; F. H. Harley, London, England. Chilton Editorial Board: Paul Wooton, Washington representative.
Robt. Gunning—Readability Consultant

WASHINGTON EDITORIAL OFFICE
Washington 4....National Press Bldg.

BUSINESS STAFF

Production Manager — Warren Owens
Director Research — Oliver Johnson
Marketing Director — R. H. Groves
Circulation Mgr. — W. M. Coffey
Promotion Manager — Richard Gibson
Asst. Research Dir. — Wm. Laimbeer

REGIONAL BUSINESS MANAGERS

*Denotes editorial office also

Atlanta 3.....J. W. Sangston
32 Peachtree St., NE. Jackson 3-6791
*Chicago 1..T. H. Barry, W. R. Pankow
360 N. Michigan Ave. Randolph 6-2166
*Cleveland 15, R. W. Watts, R.L.White
930 B. F. Keith Bldg. Superior 1-2860
Columbus 15, Ohio...Harry G. Mumm
LeVeque-Lincoln Tower Capital 1-3764
Dallas 6.....W. J. Smyth
189 Meadows Bldg. EMerson 8-4751
*Detroit 2.....W. J. Mulder
103 Pollister Ave. Trinity 1-3120
*Los Angeles 28.....R. Raymond Kay
2420 Cheremoya Ave. Holly'd 3-1882
*New York 17...C. T. Post, I. E. Hand
100 E. 42nd St. Oxford 7-3400
*Philadelphia 39—
B. L. Herman, J. A. Crites, W. E. Carr
Chestnut & 56th Sts. Sherwood 8-2000
*Pittsburgh 19.....T. M. Fallon
1707 Frick Annex Bldg. Atlantic 1-1830
San Francisco 3.....Don May
1355 Market St. UNderhill 1-9737
W. Hartford 7.....Paul Bachman
62 LaSalle Rd. Adams 2-0486
England.....Harry Becker
15 Gratton St., Altrincham, Cheshire

A Chilton Publication

CHILTON OFFICERS & DIRECTORS

G. C. Buzby, President

Vice-presidents: P. M. Fahrendorf, L. V. Rowlands, G. T. Hook, R. E. McKenna; Treasurer: W. H. Vallar; Directors: M. E. Cox, F. P. Tighe, E. B. Terhune, Jr., R. W. Case, Jr., J. C. Hildreth, Jr., C. A. S. Heinle, J. H. Kofron—Comptroller, Stanley Appleby.

Indexed in Applied Science & Technology Index and Engineering Index.

Copyright 1959 by Chilton Company

THE IRON AGE, published every Thursday by CHILTON COMPANY, Chestnut & 56th Sts., Philadelphia 39, Pa. Second class postage paid at Philadelphia, Pa. Price to the metalworking industries only or to people actively engaged therein, $5 for 1 year, $8 for 2 years in the United States, its territories and Canada. All others $15 for 1 year; other Western Hemisphere countries, $25; other Foreign Countries, $35 per year. Single Copies 50¢. Annual Review Issue $2.00. Cable: "Ironage," Philadelphia.

The IRON AGE

August 27, 1959—Vol. 184, No. 9

Digest of the Week in

★Starred items are digested at right.

EDITORIAL

The Pendulum Swings: From the Unions This Time 7

NEWS OF INDUSTRY

★**Special Report:** OCDM Seeks Cure For Stockpile Headache 43
★Steel Supplies Worry Stampers 45
★Non-Intervention Pressure Grows 46
★Negotiators Talk Revised Contract 47
★Air Cargo Grows at Jet Speed 48
The IRON AGE Salutes 53
Men in Metalworking 73
★**Special Report to Management:** How The "Marketing Concept" Helps Launch New Products 57

FEATURE ARTICLES

★Line Rolls Precision Rings From Low-Cost Billets 79
★Quality Control Gages Production 82
Tool Eases Core Wire Removal 85
★Plate Life Into Your Dies 86
★Chamfer and Ream in One Pass 89
★Plant Security at Low Cost 90
Adhesive Tightens Rail Joints 92

NEWS ANALYSIS

Newsfront 9
Report to Management 55
★Automotive 61
★Washington 65
★West Coast 67
Machine Tools 69

MARKETS & PRICES

Market Planning Digest 41
★**The IRON AGE Summary** 111
★Purchasing 112
Index to Prices 115
Iron and Steel Scrap Markets 116
Nonferrous Markets 118

REGULAR DEPARTMENTS

Fatigue Cracks 13
Coming Exhibits, Meetings 15
New Materials, Components 105
New Equipment 106

INDEX TO ADVERTISERS 136

NEWS ARTICLES

STOCKPILES

A Second Look—OCDM is taking another look at nation's growing stockpiles of strategic materials. Efforts to lop off $2 billion in materials considered. P. 43

MITCHELL REPORT

White House Pressure—Study by Secretary of Labor is the latest step by the White House to apply pressure for a compromise settlement of steel strike. Both sides claim vindication. P. 46

CONTRACT PROGRESS

Talk Contract—For the first time, negotiators are talking specific contract language. It may not mean a break, but it gives both sides a starting point. P. 47

AIR FREIGHT

Jet Age Begins—Air Cargo records should be set this year, but the jet cargo transports should give the

Metalworking

◀ COVER FEATURE

NEW PRODUCT SESSION: At Budd Co., the job of launching a new product is a "marketing team" operation. Group here is planning strategy on a new welding control. J. C. Collins, market research manager is at right. For others in photo see story. P. 57

field a real boost by reducing costs and speeding service. P. 48

TAXES, TAXES, TAXES

Increase the Take—National income tax crops up again as the last big, untapped source of new revenue. New Commerce Secretary favors it as means of equalizing taxes on manufactured goods. P. 65

FEATURE ARTICLES

ROLL PRECISION RINGS

From Low-Cost Billets — Here's a preview of a fully automatic production line that hot forges and roll-forms hundreds of precision metal rings per hour from inexpensive billet blanks. The setup will be unveiled next month at the Machine Tool show in Paris. P. 79

QUALITY CONTROL

Gages Production — This down-to-earth program in a powermower plant looks at the final product from the customer's viewpoint. The company's inspection plan is geared to handle the manufacture of reel and rotary lawnmowers. P. 82

PLATE LIFE

Into Your Dies—Hot-work die wear has long been a problem for many fabricators. One solution is a thermally bonded nickel or tungsten plate, inexpensive and easy to apply. Consideration of some of the causes of failure will assist in understanding the die users' problems. P. 86

CHAMFER AND REAM

In One Pass—At Ford's Dearborn plant, a deburring setup saves 65 pct on machining costs. On differential cases, the new tool combines three steps in one. P. 89

GUARD SERVICE

Handles Plant Security—Here's a plant that's getting more done under the heading of plant security by out-contracting the job. It's also eliminating hidden costs and administrative headaches. P. 90

MARKETS & PRICES

JOB STAMPERS

Busy But Worried — Stamping shops never experienced their usual summer slowdown. They are still operating at high levels, but pending steel shortages may force production cutbacks if strike continues a few more weeks. P. 45

AUTO PREDICTIONS

10 Pct Increase? — GM executives predict a 10 pct gain in sales in 1960. New small cars are expected to cut into imports. Some price increases are hinted. Steel strike may cause trouble. P. 61

SHIPBUILDING SQUABBLE

It's East Versus West—Shipyards in East and Gulf Coast regions want Congress to end Farwest's 6 pct advantage in bidding. West Coast yards set to battle back. P. 67

STEEL SUMMARY

Shortages Here — In spite of outward signs of high steel inventories, shortages are showing through. Parts suppliers for major industries are hit early. P. 111

OFFICE FURNITURE

Trends in Styling—The combination of attractiveness and utility in the modern executive's office has resulted in greatly increased business for the industry. P. 112

NEXT WEEK

LIGHT CARS COMING

Detroit's Surprise Packages—Unwrapping the Big Three's new light cars shows they've received more engineering attention than any Detroit products in years. They've been designed with ingenuity for comfort and reasonable economy.

Now! Tests prove

CONTOUR-WELDED* STAINLESS TUBING

gives products better protection against contamination

This tubing is smoother inside – so there's less danger of product incrustation. And this means better protection against contamination. Not only that, a smoother surface also ensures greater resistance to corrosion and longer fatigue life.

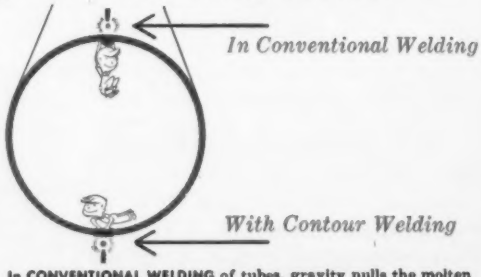
Here's why TRENTWELD® tubing, made by the exclusive *Contour-Weld* process, is smoother than any other tubing:

First, it's smoother than seamless tubing because it's formed from uniformly rolled strip steel whereas seamless is extruded from a billet.

Second, it's smoother than other welded tubing because the Trent-patented *Contour-Weld* process virtually eliminates the weld bead.

But get full details on why smoother tubing surfaces are vital. Send for the free 48-page "Trentweld Manual." It contains complete data on *Contour-Welded* tubing in stainless and high alloy steels, titanium, zirconium, zircalloy and Hastelloy†, in sizes from ⅛" to 40" O.D. Write: Trent Tube Company, Box 2518, Pittsburgh, Pa.

†Trademark Haynes Stellite Co.



In **CONVENTIONAL WELDING** of tubes, gravity pulls the molten metal down to form a bead that is difficult to remove by cold working. And cold working may lead to undercuts, focal points for fatigue cracks and corrosive attacks. Cleaning becomes difficult.

* With **CONTOUR-WELDING** the tube is welded at the bottom. Gravity still pulls the molten metal down inside the tube, but now the weld area corresponds to the contour of the tube. There's virtually no weld bulge on the inside surface. And even on the O.D., the weld seam more closely conforms to the contour of the tubing.

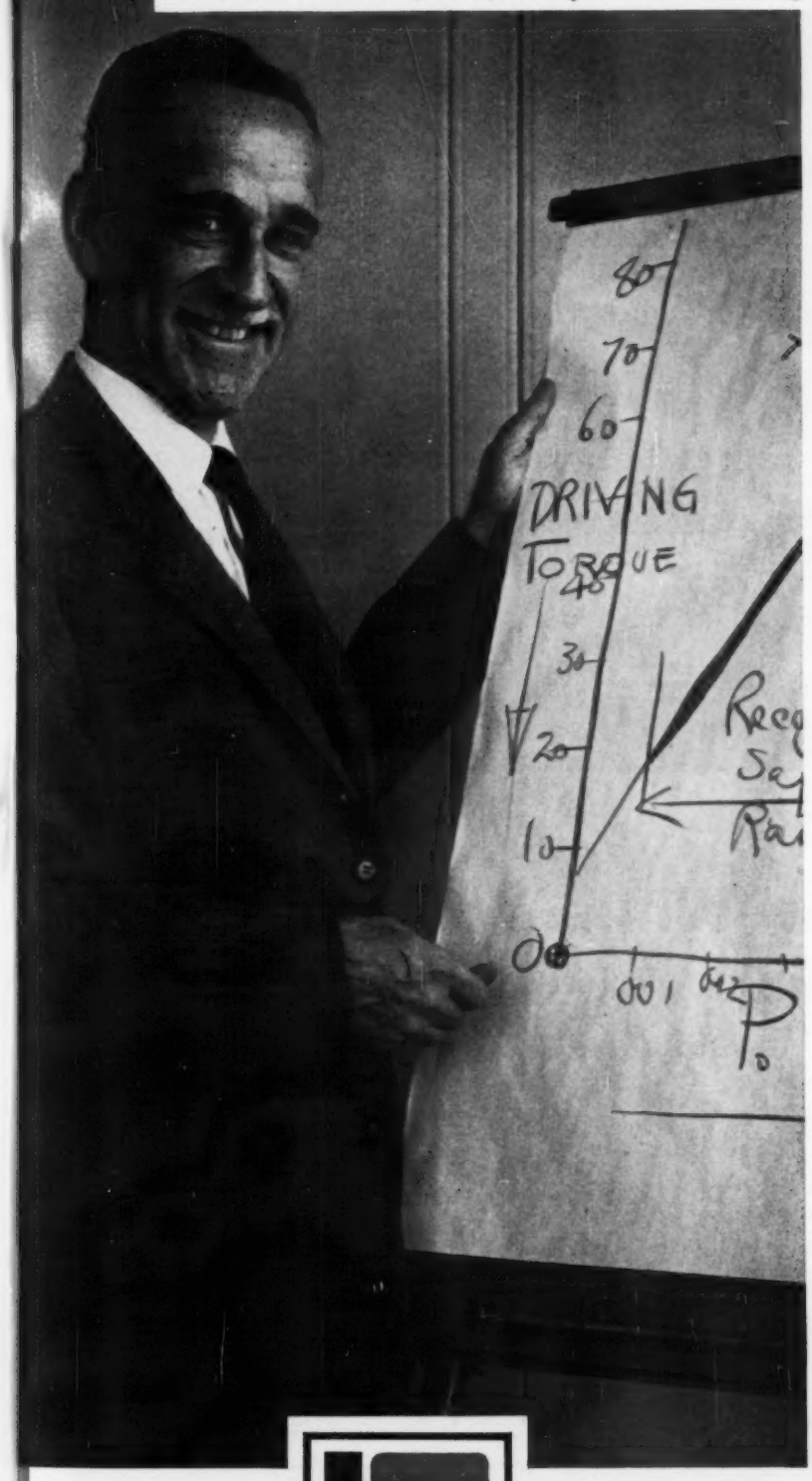
CONTOUR TRENTWELD®

stainless and high alloy pipe and tubing

TRENT TUBE COMPANY

Subsidiary of Crucible Steel Company of America • GENERAL OFFICES: East Troy, Wisc. • MILLS: East Troy, Wisc.; Fullerton, Calif.

WILLIAM G. WALTERMIRE, *Chief Products Engineer, Lamson & Sessions, says...*



Your interest... and ours... is "assembled product cost"

Many fastener users think only in terms of unit price. Actually, labor costs of assembly are usually 3 to 4 times the price of the fastener itself.

Your job, and ours, is to find practical ways to cut your "cost of assembled product". To do this, we frequently hold meetings with purchasing personnel, design engineers, standards engineers, and quality control people at our customers' plants.

By means of charts and slides, we show how to simplify types and sizes of fasteners used, which reduces purchasing and inventory costs. We guide them in selection of thread classes to meet different material, tapping and assembly problems. We often suggest ways to improve strength and cut costs—by substituting a smaller high carbon fastener for a larger size, low carbon type. Or we may suggest redesign of a bolted assembly to use standard instead of special fasteners.

Take advantage of this no-charge L & S service. Call or write us for an analysis of *your* fastener problems.

L & S Fastener Engineering helps you "tighten up" on...

- **PURCHASING COSTS**
- **INSPECTION AND HANDLING COSTS**
- **ASSEMBLY COSTS**

LAMSON & SESSIONS

5000 TIEDEMAN ROAD • CLEVELAND, OHIO

Plants in Cleveland and Kent, Ohio • Chicago and Birmingham

Get Service While You Sleep

from Steel Service Centers of Armco Stainless Distributors

Late afternoon orders are often on their way at dawn from steel service centers of Armco Stainless Distributors. Such "first-thing-in-the-morning" service is possible because many truck loading operations take place while you sleep.

The same efficient loading and quick delivery go on all day, too. It's just part of the 'round-the-clock help you can expect from your distributors of Armco Stainless Steels.

But prompt delivery is only one phase of their complete service. Mill-trained distributor salesmen and metallurgists can often provide quick answers to your problems of stainless selection, design and fabrication.

It will pay you to find out more about the many services provided by the Armco Stainless Distributor near you. For his name, just fill in and mail the coupon.

ARMCO STEEL CORPORATION
3019 Curtis Street, Middletown, Ohio

Who is my nearest distributor of Armco Stainless
☐ sheet and strip? ☐ bar and wire?

Name_____

Title_____

Firm_____

Street_____

City_____ Zone____ State_____

ARMCO STEEL

Armco Division • Sheffield Division • The National Supply Company • Armco Drainage & Metal Products, Inc. • The Armco International Corporation • Union Wire Rope Corporation

The Pendulum Swings: From the Unions This Time

Labor monopoly in this country is in the early stages of being broken up. Most union officials are not yet aware of this basic drift.

Signs of the times are seen in votes of Congressmen and Senators for some kind of a labor bill that is not a powder-puff law. Many observers thought the people's representatives did not have the guts to take such a strong stand.

Lawmakers usually are able to judge the temper of the times. If they don't, they don't come back to Washington. This time, as usual, they sensed that the President struck a responsive cord by plugging for a good labor bill.

It looks, too, as though the steel industry had properly gaged the feelings of the people about inflation—or the fear of it. It may be that Steelworkers union officials also feel this drift in public opinion but are not yet ready to face the facts.

The same kind of head-in-the-sand reaction plagued industry after the turn of the century. It took quite a number of years for our industrial barons to wake up. There is no reason to believe that some of our union-monopoly barons will come by the hard facts any easier.

There is no reason to expect that maturity in union actions will come overnight. There is a lot of work to be done—by the people and by their representatives in Washington.

It may take many years to prove to some labor leaders that unions can't dodge the basic responsibility that goes with power. And it may be too late for them to assume such a responsibility. Instead of self-discipline, it now looks as though the laws of the land eventually will make sure that unions stay within reasonable bounds.

None of this feeling means the public is against unions. Nor does it mean that industry is on a union-busting spree. The best way in the world for business to get its skull cracked by the people would be to take unfair advantage of what is now a basic national demand for more reasonable union actions, tactics and policies.

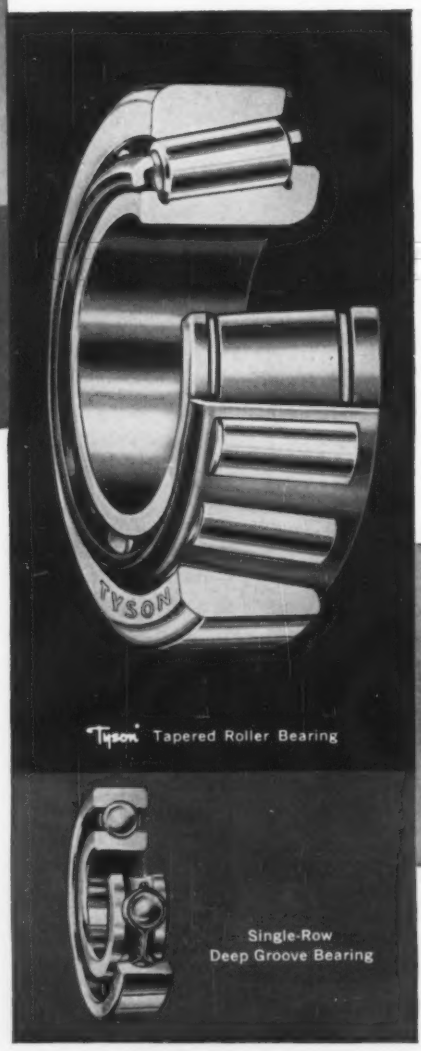
Those industrialists who know how to ride with the tide should take this opportunity to get closer to their workers, to their foremen, and to their local union officials. There is no substitute for the human approach. Long after national labor hassles are over, the manager and the foreman must live with the local union people, and with the workers as a whole.

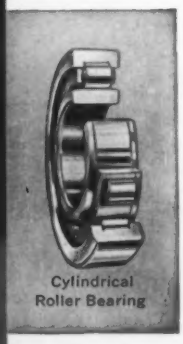
Let the pendulum do its own work!

Tom Campbell

Editor-in-Chief

We make so many sizes... your "specials" could be our "standards"





We regularly produce all of the bearings shown here in a tremendous variety of bores, outside diameters, and widths.

Take just the Tyson tapered roller bearing, for example. We make nearly 1,000 sizes of the single-row, straight bore type alone! Bore sizes range from five-eighths of an inch right up to a precise fourteen inches. And these figures don't include the many other sizes available in our double- and four-row types.

Yet they are all standard SKF *bearings,* promptly available in large quantities at competitive prices.

So, why not get full details on the most complete line in the business? Any of our twenty-five sales offices can quote you facts and figures. Just call the one near you.

5921

Spherical, Cylindrical, Ball, and Tyson® *Tapered Roller Bearings*

EVERY TYPE—EVERY USE

SKF®

SKF INDUSTRIES, INC., PHILADELPHIA 32, PA.

*REG. U. S. PAT. OFF.

Bonds Inserts to Castings

A new method bonds cast-iron inserts into aluminum diecastings. The bond is a mechanical interlock of the two metals that results in high tensile and shear strengths with the added ability to withstand combined stresses. Current uses include cast-iron cylinder liners for aluminum engine blocks and cast-iron brake liners for aluminum brake drums and wheels.

Swaging Alloy Tubing

A new cold draw forming technique swages high-strength heat-resistant alloy tubing. Developed by Boeing, the process uses nested aluminum tubing to prevent collapse of the superalloy during swaging. The method also overcomes buckling, cracking, wrinkling, and bulge and flare problems.

Sputtered Resistors

Sputtered thin-film resistors, formed from refractory metals such as tantalum and titanium, may be one of the more important developments in microminiature electronics, according to Bell Laboratories. They can be produced on glass or ceramic bases in lines as narrow as 1 mil, spaced 1 mil apart.

Gun Ream Light Metals

With the boom in light metals, better methods of machining are being sought. Reaming cored holes of diecastings with gun-type tools seems especially promising, according to automotive tool engineers. Tests show that the tools also work well on the new aluminum-silicon alloys.

Welds Metal by Friction

Friction welding is finding some industrial use in Europe. The process is being used in several Czech plants for welding high-speed drills and milling cutters to mild-steel shanks. By exerting force to the two rotating parts being welded, friction occurs. Subsequent heat between the contacting surfaces spreads to the adjacent metals. At a certain instant, a weld is produced.

Continuous Casting

Several American steel companies are taking a hard look at continuous casting of wide slabs. Concast, Swiss affiliate of Continuous Metalcast Co., now has orders for units to make slabs up to 8 in. thick by 50 in. wide for French and Japanese mills, the latter for both stainless and carbon steels. A Concast unit in England makes 36-in. wide slabs.

Insulate with Neoprene

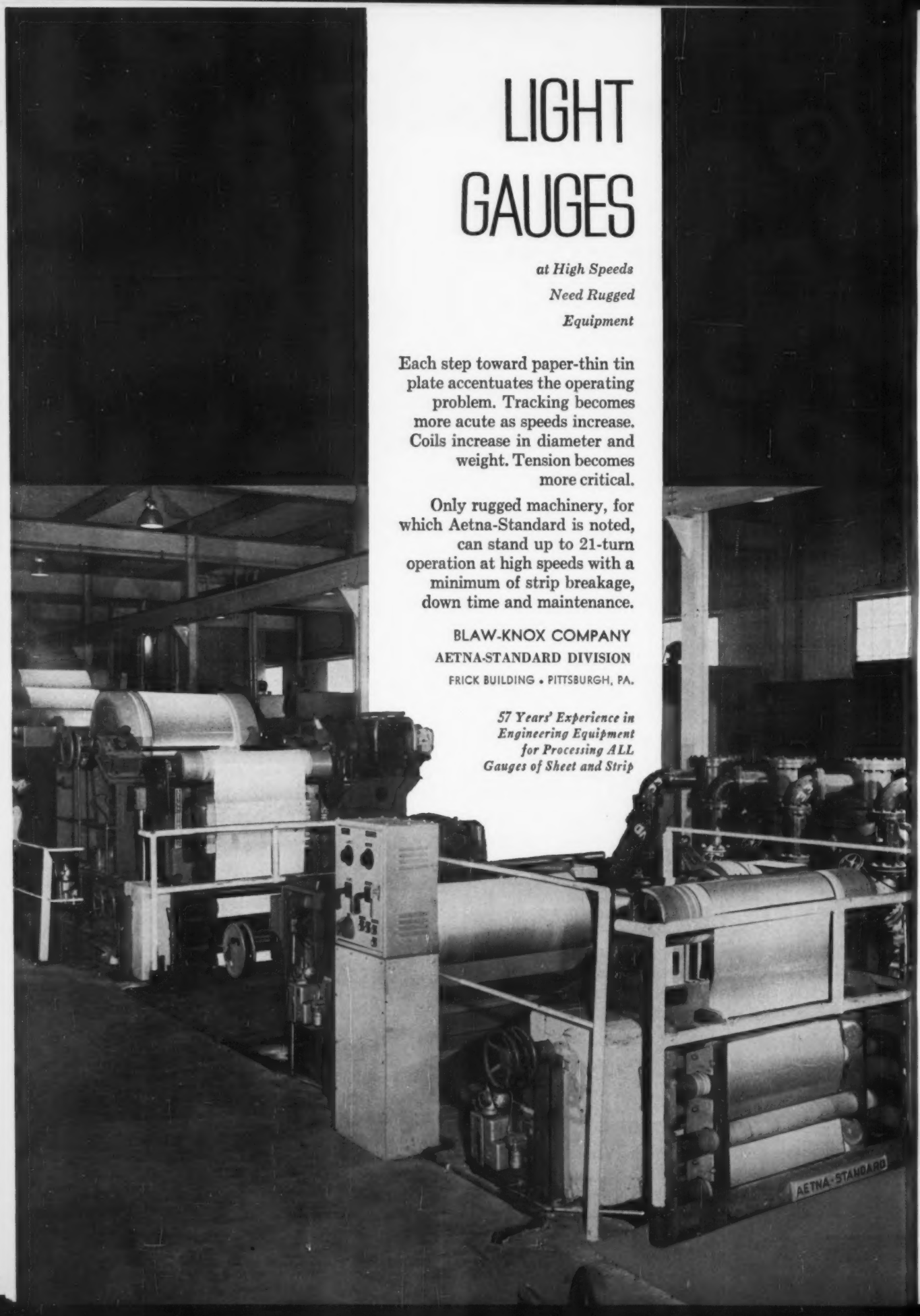
Closed-cell neoprene tubing is now being used as insulation for air-conditioning and refrigeration lines. It slips over new piping like a sleeve or can be slit for easy application to installed piping. In the latter case, the neoprene sponge is sealed with an adhesive.

Reaction to Imports

Hostility toward imported products may become an increasingly important commercial fact. One motor maker is dropping a foreign-built line, partly because of unfavorable customer reaction. A steel mill recently told a salesman he would not be welcome if he came calling in a foreign car. Companies that depend on steel mills for business are going slow in the use of foreign steel.

Volume Trade with Russia?

Top government officials don't see much hope for big volume trade with Russia. The U. S. has no intention of relaxing curbs on selling them war-type items. In nonstrategic areas, the Reds only want our know-how. They'll buy once, then copy, and buy no more. U. S. officials will promote only trade in items which both sides will continue to buy. These will be few, they say.



LIGHT GAUGES

at High Speeds
Need Rugged
Equipment

Each step toward paper-thin tin plate accentuates the operating problem. Tracking becomes more acute as speeds increase. Coils increase in diameter and weight. Tension becomes more critical.

Only rugged machinery, for which Aetna-Standard is noted, can stand up to 21-turn operation at high speeds with a minimum of strip breakage, down time and maintenance.

BLAW-KNOX COMPANY
AETNA-STANDARD DIVISION
FRICK BUILDING • PITTSBURGH, PA.

57 Years' Experience in Engineering Equipment for Processing ALL Gauges of Sheet and Strip

Khrushchev's Call

Sir — The timely editorial "Khrushchev's Visit: Let's Keep Right Side Up" (Aug. 13 issue) was interesting to me.

It is refreshing to read a well-written article which shows logical analysis and conformity to objective truth. Had we more editors like Mr. Campbell who would think a little deeper, perhaps so many Americans would not be fooled by emotional mob appeal.

Thank you for an interesting and informative editorial. — M. D. Kenny, McDonnell Aircraft Corp., St. Louis, Mo.

Question of Time

Sir—In the automotive column of the March 5 issue you state that the Detroit Electric ran out of juice in 1931-2.

According to records at my disposal, this vehicle was produced between the years 1907 to 1923.

Could you please verify which date is the correct one for disappearance of this car from the public market?

I wish to congratulate you on your articles regarding the automobile industry in the Americas. Information of this sort is very difficult to find in this country.—Ian Graham, Aluminum Co. of South Africa, Ltd., Pietermaritzburg, South Africa.

▪ **According to records of the American Automobile Manufacturers the first reports of the Detroit Electric date back to 1908, although it is possible the vehicle was manufactured some time in the previous year. AMA files show serial numbers running through 1924. There is also on record a mention that the company filed for bankruptcy in 1925. However, there is no mention that the bankruptcy proceeding was ever complete.**

Insurance records on file at AMA show Detroit Electric continued to produce vehicles after 1925, although records are hazy about the numbers produced. In 1929 the company introduced its Model 99, and these same insurance records show registrations of new Detroit Electric models numbers 97 and 99 as late as the year 1931.—Ed.

Magnesium's Role

Sir—I enjoyed reading the article "Magnesium Gets Another Chance at Many Markets" which appeared in the July 23 issue. Congratulations on a very nicely written story.

We like to see articles on our improving price picture and general competitive economics compared with aluminum and other metals. Reduction in costs and more widespread experience will give magnesium the stature it deserves.—J. D. Hanawalt, Vice Pres., Dow Metal Products Co., Midland, Mich.

"Office morale has certainly improved since you've been here Calahan, how do you do it."

In a recent nation wide survey of honeycomb section manufacturers by an independent research organization, 75% of the responders indicated that uniform thickness of the thin metal core material was the most important factor demanded of suppliers.

With modern equipment, such as Accu-Ray gauges, Sendzimir rolling mills and unique vertical annealing furnaces, Somers combines 50 years of pioneering in the thin metal field to answer this problem with Somers Thin-Strip®, produced exclusively by Somers Brass Co., Inc.

Somers also guarantees width tolerances as close as ± .001", a plus feature that assures the highest precision in honeycomb structures.

Whether your thin metal problem be in stainless, nickel or its alloys, copper or its alloys, 17-7, PH-15-7 MO or other honeycomb metals, you can depend on Somers ThinStrip® to meet your most critical specifications.

Write for Confidential Data Blank without cost or obligation.

FOR EXACTING STANDARDS ONLY

Somers

Somers Brass Company, Inc.

102 BALDWIN AVE. WATERBURY, CONN.

LOOK TO THE *Future*

ALLIANCE'S engineering achievements through the years in a growing industrial world are viewed only for what they can contribute to the future. For outstanding quality and greater production through skillful engineering, look to ALLIANCE for leadership.

ALLIANCE FOR GREATER OVERALL RETURN FOR YOUR INVESTMENT.

Give us the Runway... and We'll Lift the World.

the **Alliance**

machine company

Main Office Alliance, Ohio

Overhead Cranes * Gantry Cranes * Mill Cranes and Equipment * Hot Metal Cranes * Ladle Cranes * Stripper Cranes * Soaking Pit Cranes * Soaking Pit Cover Cranes * Charging Machines * Furnace Chargers * Slab Handling Cranes * Bucket Cranes * Magnet Cranes * Mold Yard Cranes * Skull Cracker Cranes * Ingot Buggies * Run-Out Tables * Car Dumpers * Special Mill Equipment * Ore & Coal Bridges * Loading & Unloading Towers * Forging Manipulators * Forging Cranes * Power House & Dam Cranes * Dock & Pier Handling Equipment * Research, Development & Engineering Service * Licensees & Manufacturing Facilities in Other Countries

This Is No Joke

New Concept—To the man in the street "marketing" is his wife pushing a cart through the local supermarket.

The man in industry usually thinks of it as bright young men in Brooks Bros. shirts pouring over charts and figures—gathering facts for the sales or advertising manager.

More Than Facts Alone—You think all executives know that marketing means that all of a company's functions must be customer-oriented? That whether you are in manufacturing, design or accounting —the customer is the man you keep your eye on. And if you don't know who he is and where he is and what he thinks of your product—then you had better find out. That's marketing—or a loose description of it anyway.

H. A. BOAS, JR.: "Marketing management must assume much of the responsibility for guiding the search for new products and bringing them to market." (See story, p. 57.)

We know about this misconception because we (our Research Dept., that is) made a small survey. Here's what they found: Executives of companies which do not have their own market research departments think of market research as a fact-gathering agency only.

Sharp Difference—But where a company has its own market research department, its executives expect their market research people to take part in management decisions.

Which suggests that people who have never really used marketing don't know what it can do for them. Of course, market research is just one aspect of the whole marketing picture.

New Series—To explain a little more about this fairly new concept, the editors this week begin a series of articles (see p. 57, showing how four well-run companies use marketing to boost their sales and earnings.

On Camera

Tom Campbell, IRON AGE Editor-in-Chief, has been covering the steel labor talks since they began this spring. In a recent interview on the John Daly TV News Show (ABC network and affiliated stations) he reviewed the situation and discussed the latest developments.

The program — beamed at an audience of 2 million—originates in New York and is rebroadcast twice to different areas of the country.

Tom's long experience in reporting steel labor gave viewers an added insight into the whys and wherefores of the current shutdown. (For his comments on the progress of the negotiations see p. 47 of this week's issue.)

TOPS 'EM ALL

IN QUALITY OF TUBING

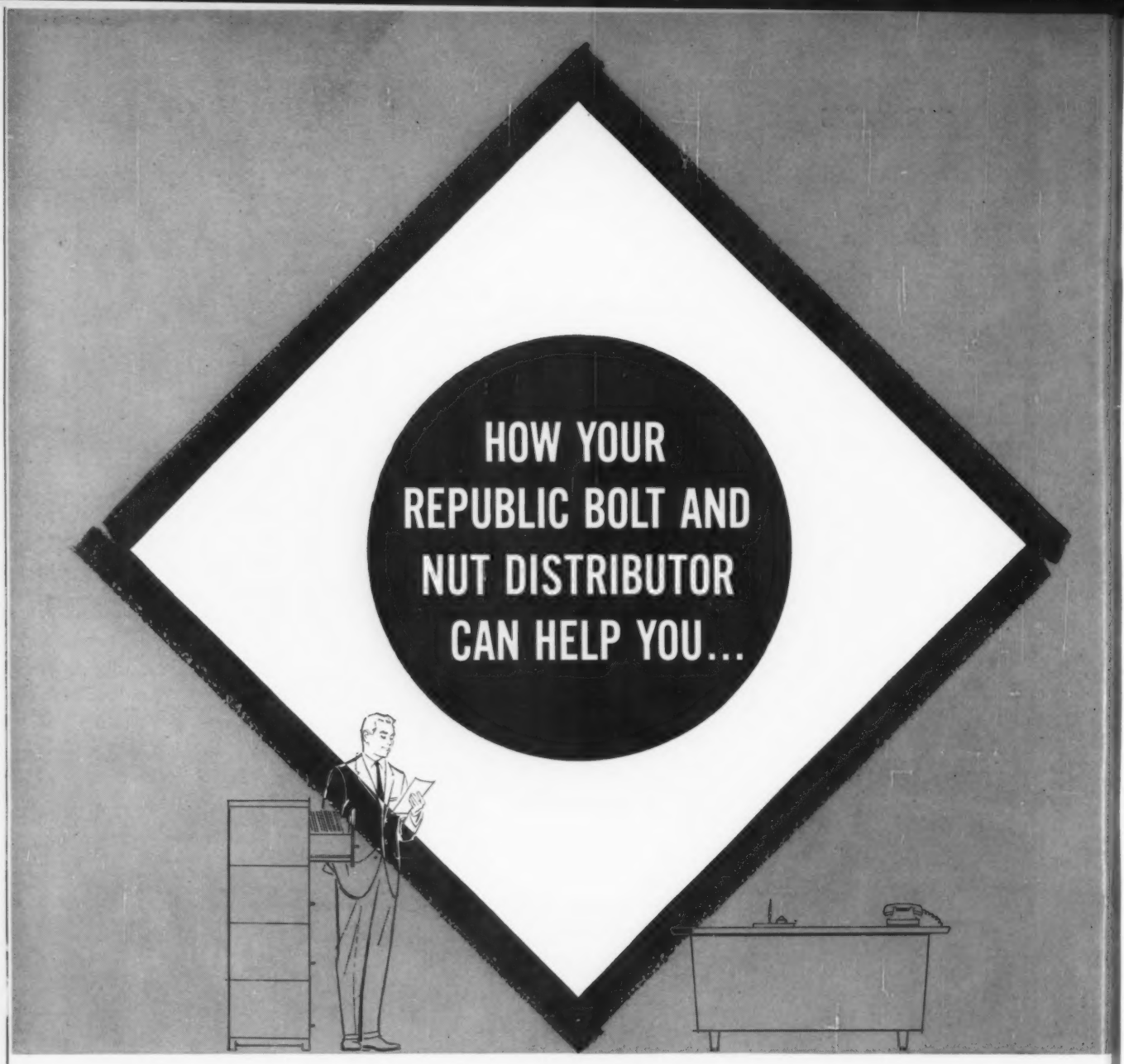
Comparative quality tests by one of America's leading users of tubing proved only Precision Tubing rates excellent in all specifications . . . yet Precision Tubing costs no more.

Precision Tubing is unequalled and unsurpassed in quality tests of accuracy, temper, straightness and roundness. You are sure of extra quality in every size tube at regular mill prices. Available in sizes from .010" to 1.125" O.D. in copper, brass, aluminum, up to ⅝" O.D. in nickel and nickel alloys, Ni-Span "C", phosphor bronze and nickel silver. In straight random lengths, coils or preformed shapes to specifications.

Write for catalog and technical data to Dept. 9, Precision Tube Company, Inc., North Wales, Pa.

GET THIS NEW TUBING DATA CATALOG

PRECISION TUBE COMPANY



Meet emergency needs for fasteners of any type

No one can anticipate every fastener need. With the wide variety of fasteners available, only your Republic Bolt and Nut Distributor is in a position to help you meet all your fastener requirements.

It is his business to maintain complete inventories of standard fasteners of every kind. He is fully familiar with the latest developments in fasteners. And he can give you prompt deliveries in any quantity—from a single bolt to a case to a truckload.

If your requirements call for fasteners of a special type, your Republic Bolt and Nut Distributor has the experience and facilities to deliver the right type of fastener when and where you need it.

It will pay you to contact your Republic Bolt and Nut Distributor now. A single phone call will put you in touch with him.

Call your local distributor for quick deliveries of...

REPUBLIC Bolts and Nuts

REPUBLIC STEEL

COMING EXHIBITS

Instrumentation Show — Sept. 21-25, International Amphitheatre, Chicago. (Instrument Society of America, 313 Sixth Ave., Pittsburgh 22.)

Metal Show — Nov. 2-6, International Amphitheatre, Chicago. (American Society for Metals, 7301 Euclid Ave., Cleveland 3.)

MEETINGS

SEPTEMBER

Pressed Metal Institute — Annual meeting, Sept. 13-17, Estes Park, Colorado. Institute headquarters, 3673 Lee Rd., Cleveland.

American Mining Congress—Metal mining-industrial minerals convention, Sept. 14-17, Denver, Colorado. Congress headquarters, 1200 18th St., N. W., Washington, D. C.

American Die Casting Institute—Annual meeting, Sept. 15-18, Edgewater Beach Hotel, Chicago. Institute headquarters, 366 Madison Ave., New York.

National Petroleum Assn.—Annual meeting, Sept. 16-18, Traymore Hotel, Atlantic City, N. J. Association headquarters, Munsey Bldg., Rm. 958, Washington 4, D. C.

Steel Founders' Society of America—Fall meeting, Sept. 21-22, The Homestead, Hot Springs, Va. Society headquarters, 606 Terminal Tower, Cleveland.

Electronic Industries Assn.—Quarterly meeting, Sept. 22-24, Plaza Hotel, New York. Association headquarters, 1721 DeSales St., N. W., Washington 6, D. C.

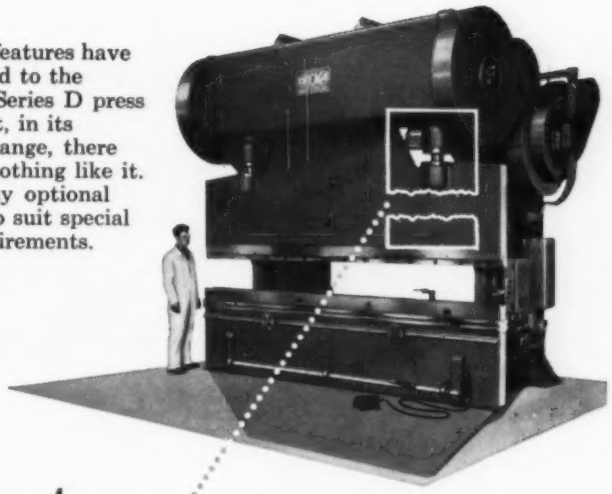
Porcelain Enamel Institute, Inc.—Annual meeting, Sept. 24-26, The Greenbrier, White Sulphur Springs, W. Va. Institute headquarters, 1145 19th St., N. W., Washington 4, D. C.

Association of Iron & Steel Engineers—Convention, Sept. 28-Oct. 1, Sherman Hotel, Chicago. Asso-

(Continued on P. 16)

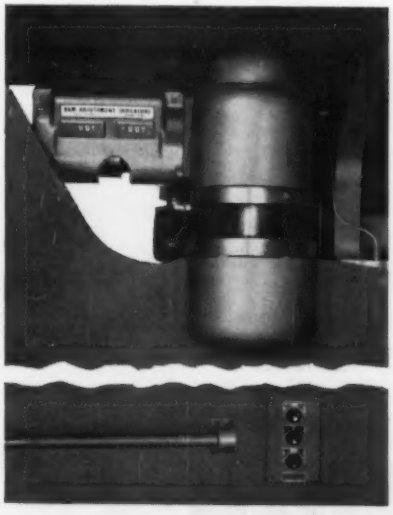
IN FEATURE
AFTER FEATURE
there's nothing like it

So many features have been added to the CHICAGO Series D press brake that, in its capacity range, there really is nothing like it. Also, many optional features to suit special work requirements.



features for

Operating Conveniences to Save Time and Money
Unexcelled Accuracy
Quiet, Smooth Running
Operator's Safety and Machine Protection
Superior Production Performance



Here's one of the operating conveniences: the ram adjustment control with OPEN-UP-DOWN push-button station (110-volt operation) and the counter-type indicators for left and right-hand adjustment screws close together in convenient view of operator. Think of the effort and set-up time saved with this exclusive adjustment control.

The advanced design CHICAGO Series D press brakes are described in bulletin D-59. Ask for a copy.

9087

A Tradition of Quality and Value since 1899

Press Brakes • Press Brake Dies
Straight-Side-Type Presses
Hand and Power Bending Brakes
Special Metal-Forming Machines

CHICAGO DREIS & KRUMP

DREIS & KRUMP MANUFACTURING CO.
7430 S. Loomis Blvd., Chicago 36, Ill.

Buell Cyclone System on gas duct exit of sintering machine at Jones & Laughlin, Cleveland.

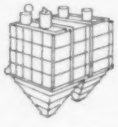
BUELL High Efficiency Cyclones at Jones & Laughlin

Specially designed for sintering machine operation, these Buell extra-efficient cyclone collectors handle 280,000 CFM of dust-laden gases from sinter bed before entering exhaust fan. Sixteen large-diameter cyclones at exhaust fan and four at the discharge end recover an important *extra percentage* of dust, beyond the abilities of ordinary cyclones, that contributes to the operating efficiency of the machine.

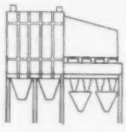
Only Buell Cyclones have the "Shave-off", which traps dust rising in the double eddy currents within the cyclone. This uniquely successful feature increases cyclone efficiency, permits large-diameter design which eliminates bridging, clogging, or plugging. Heavy plate construction and ¾" refractory lining provide long service life and minimum maintenance.

Decades of experience in the collection and recovery of industrial dusts back up Buell engineers. An analysis of your plant's dust collection problems may be made without cost or obligation. For a copy of the booklet, "The Exclusive Buell Cyclone", just write Dept. 42-H, Buell Engineering Company, Inc., 123 William Street, New York 38, N. Y.

BUELL CYCLONES



"SF" ELECTRIC PRECIPITATORS



PRECIPITATOR-CYCLONE COMBINATIONS

buell

Experts at delivering Extra Efficiency in

DUST COLLECTION SYSTEMS

EXHIBITS, MEETINGS

(Continued from P. 15)

ciation headquarters, 1010 Empire Bldg., Pittsburgh.

American Welding Society — National fall meeting, Sept. 28-Oct. 1, Hotel Sheraton-Cadillac, Detroit. Society headquarters, 33 W. 39th St., New York.

OCTOBER

National Assn. of Sheet Metal Distributors—Annual meeting, Oct. 4-7, Atlantic City, N. J. Association headquarters, 1900 Arch St., Philadelphia 3.

Truck Body & Equipment Assn., Inc.—Annual convention and exhibit, Oct. 5-7, Sherman Hotel, Chicago. Association headquarters, 1616 "K" St., N. W., Washington 6, D. C.

American Gas Assn.—Annual convention, Oct. 5-7, Chicago. Association headquarters, 420 Lexington Ave., New York.

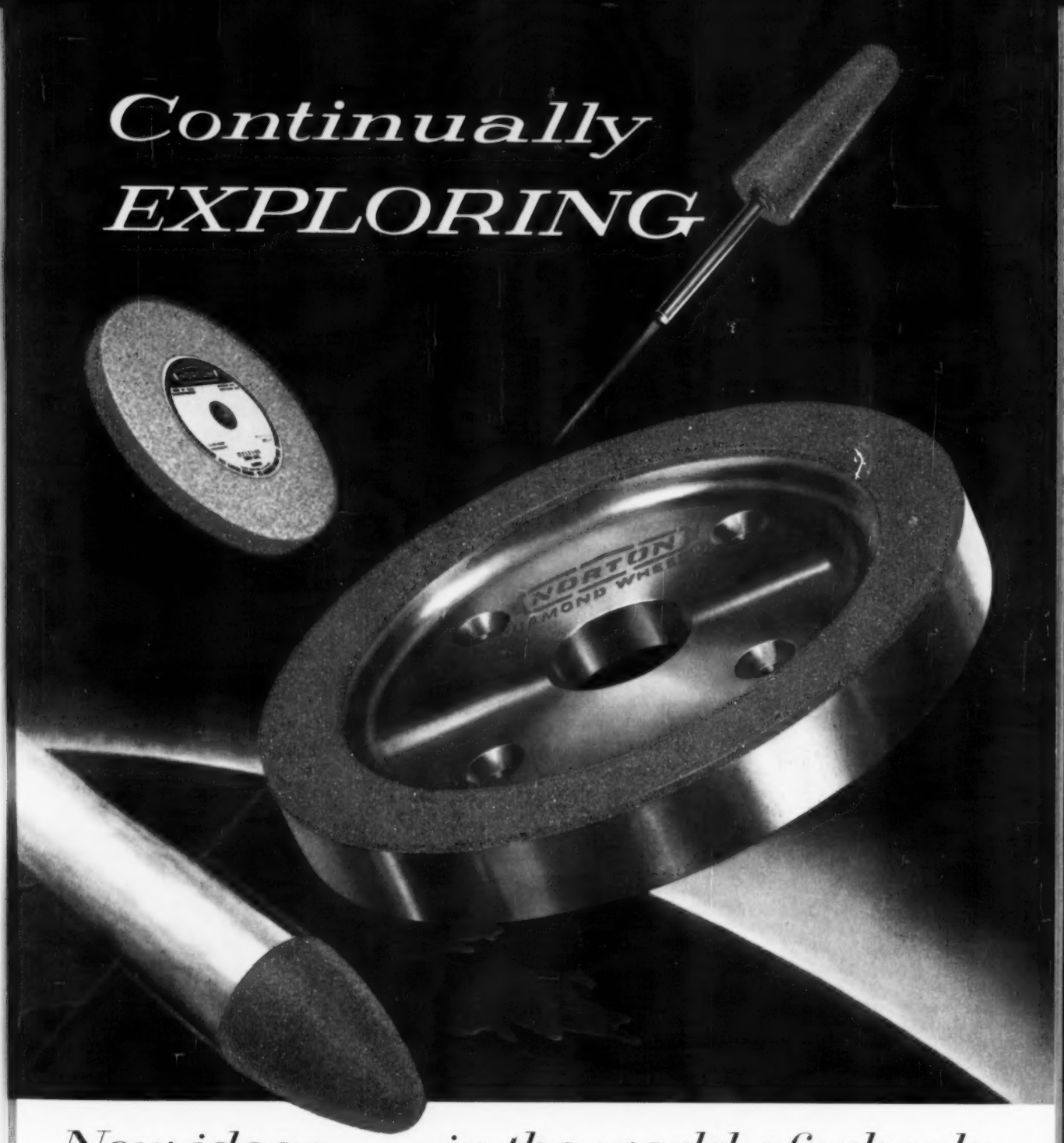
Society of Automotive Engineers—National Aeronautic meeting, aircraft manufacturing forum and engineering display, Oct. 5-10, Ambassador Hotel, Los Angeles. Society headquuarters, 485 Lexington Ave., New York 17, N. Y.

Gray Iron Founders' Society, Inc.—Annual meeting, Oct. 7-9, Fairmont Hotel, San Francisco, Calif. Society headquarters, 930 National City-E 6th Bldg., Cleveland.

Conveyor Equipment Manufacturers Assn.—Annual meeting, Oct. 10-13, Grand Hotel, Point Clear, Ala. Association headquarters, One Thomas Circle, Washington, D. C.

American Society for Testing Materials—Pacific area national meeting, Oct. 11-16, Sheraton-Palace Hotel, San Francisco, Calif. Society headquarters, 1916 Race St., Philadelphia.

Wire Assn. — Annual convention, Oct. 12-15, Statler Hotel, Cleveland. Association headquarters, 453 Main St., Stamford, Conn.



New ideas in the world of wheels

Norton abrasives are constantly reaching new heights of "Touch of Gold" performance, improving products and reducing grinding costs every time they go into action.

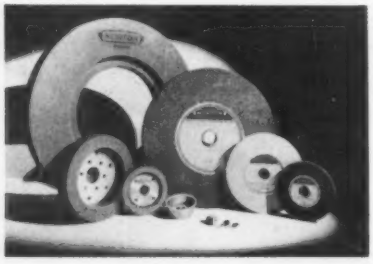
Call your Norton Man

After thorough training at the Norton plant, your Norton Man has had long practical experience as a consulting specialist on the widest range of grinding operations.

He'll give you expert advice on the selection, use and care of grinding wheels. He's ready to supervise complete wheel testing whenever necessary. And, if needed, he'll make a free Abrasive Requirement Study in your plant — listing the correct specifications for each abrasive job to assure you the lowest cost-per-piece ground.

HE'S BACKED BY . . .

The World's Most Complete Line. Norton abrasive products — grinding wheels, segments, bricks, sticks, mounted wheels, abrasive for barrel-finishing, grain for polishing and blasting — are designed to cover all abrasive operations, ranging from



heaviest stock removal to the most delicate precision finishing. Norton grinding wheels are made in exactly the right types and sizes to bring you the value-adding, cost-cutting "Touch of Gold."

Great New Discoveries. Over 190 Norton scientists and technicians, in many specialized laboratories, are using the latest equipment for research, development and testing of more efficient, more economical abrasives and abrasive products. Latest discoveries from this center of abrasive progress include 44 ALUNDUM

abrasive, three outstanding grinding wheel bonds—G, K and R50—metal-mounting of mounted wheels, miniature mounted wheels and SD diamond wheels, using man-made diamonds.

Fastest Possible Deliveries. Besides immense factory stocks at Worcester and Santa Clara, California, Norton maintains huge warehouse stocks in five conveniently located cities. And Norton distributors, in 283 cities, keep their stocks fully adequate to meet the needs of their areas. For prompt deliveries — extra fast in emergencies — plus helpful service, your Norton distributor is as near as your phone.

NORTON
ABRASIVES

NORTON COMPANY • WORCESTER, MASS.

District Offices: Atlanta • Chicago* • Cleveland* • Detroit* • Hartford • Los Angeles Area (Huntington Park) Indianapolis • New York Area (Teterboro, N.J.) • Philadelphia* • Pittsburgh* • St. Louis

*Warehouse Facilities and Stocks at this location

BEHR-MANNING CO., Troy, N.Y. is a Division of Norton Company

Making better products . . . to make your products better

NORTON PRODUCTS: Abrasives • Grinding Wheels • Grinding Machines • Refractories • Electro-Chemicals — BEHR-MANNING DIVISION: Coated Abrasives • Sharpening Stones • Pressure-Sensitive Tapes

5-59

Man's Eternal Struggle with the Machine

COMPETITIVE PRESSURES AND RISING COSTS DEMAND GREATER PRODUCTION EFFICIENCY THAN EVER BEFORE

How do you know you're making your product right?

Rather curious question, isn't it! But before you laugh it off, take a good look at what's happening on your production line. There's more processes using manufacturers than there are manufacturers using processes.

What you're looking for is efficiency. Lack of it costs money. The kind *you* pay in overhead, competitive advantage, rejects, rework operations, etc.

For example—consider your resistance welding . . .

How many spot welds are you using to assemble the piece parts of your product? . . . as many as will fit in the space? . . . enough to "be sure" it will hold? . . . or as many as *really required!* No matter how you figure it, the first two cost too much money. Because they require either too much equipment or too much time. Usually both!

Many manufacturers use resistance welding for speed. Weld integrity (which, incidentally, does not necessarily penalize speed) is often overlooked. In order to make up for lack of weld quality, more welds are used. But fifty poor welds aren't any better than fifteen poor welds. They just cost more. Particularly when five *welds of suitable quality* will do the job!

Sciaky knows that weld efficiency is a matter of combining quality with speed. That's why Sciaky equipment is precise enough to produce consistently. Once suitable quality is established, you can depend on it throughout the toughest production conditions.

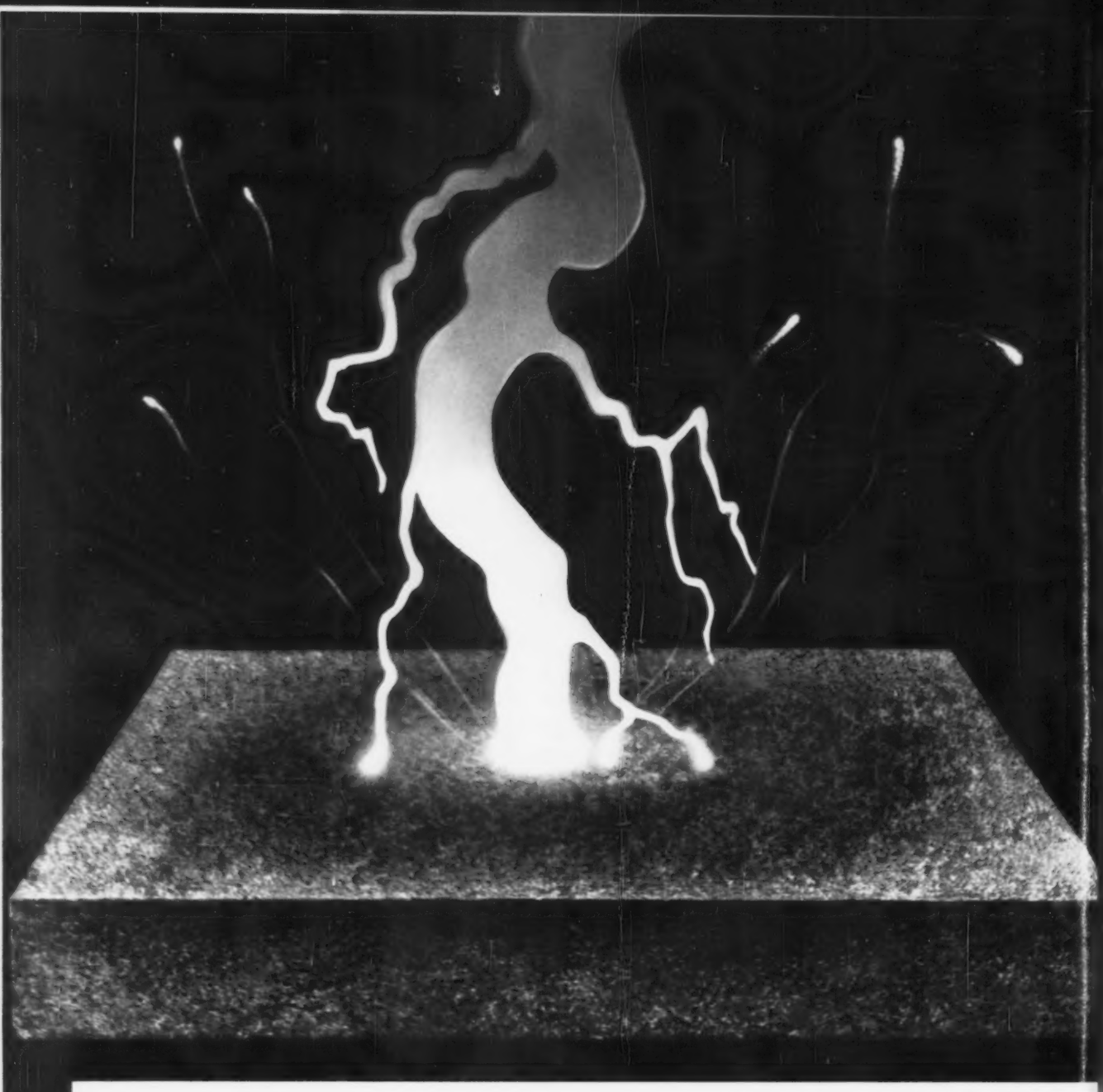
Why take less than the full advantage of consulting with a Sciaky Application Engineer the next time you're considering equipment. No obligation, of course.

The manufacturers of automobile wheels took that advantage. As a result those wheels are now being assembled with eight suitable quality welds instead of twelve rivets. Automatically. Four other operations have even been included. As a result, the wheels are better, and made faster at lower cost.

SCIAKY®

74A

SCIAKY BROS., INC., 4923 W. 67th STREET, CHICAGO 38, ILLINOIS • POrtsmouth 7-5600



High voltage "lightning" discharge at a Malleable test block.

Toughness is Malleable

Under the slamming, bruising strain of a bulldozer's roughshod ride . . . inside the battering air hammer . . . against the repetitive concussion of a machine gun's smashing action . . . wherever conditions are really brutal, Malleable iron castings prove their ruggedness.

When you're looking for toughness, it will pay you to investigate Malleable castings. Contact one of the progressive firms that displays this symbol—

MEMBER
MALLEABLE
CASTINGS COUNCIL

If you wish, you may inquire direct to the Malleable Castings Council, Union Commerce Building, Cleveland 14, Ohio, for information.

New Malleable Irons Meet Gruelling Service Tests

Toughness is a vital requirement in stressed parts. Each application, however, requires a particular combination of physical characteristics to be sufficiently "tough."

Whatever the specific requirements, one of the finest groups of materials available is the Malleable irons, as illustrated in the tables below.

Tensile Properties—A.S.T.M. Minimum Specifications
Standard and Pearlitic Malleable Irons

Designation	Tensile Strength p.s.i.	Yield Strength p.s.i.	Elongation % in 2 in.
Standard			
35018	53,000	35,000	18
32510	50,000	32,500	10
Pearlitic			
45010	65,000	45,000	10
45007	68,000	45,000	7
48004	70,000	48,000	4
50007	75,000	50,000	7
53004	80,000	53,000	4
60003	80,000	60,000	3
80002	100,000	80,000	2

Strengths up to 135,000 p.s.i. tensile and 110,000 p.s.i. yield are produced commercially under individual producers' specifications.

Other Mechanical Properties
Standard and Pearlitic Malleable Irons

	Standard	*Pearlitic*
Modulus of Elasticity in Tension, p.s.i.	25,000,000	26,000,000—28,000,000
Ration of Fatigue Strength to Tensile Strength	0.54	0.40—0.50
Shear Strength—% of Tensile Strength	80—90%	70—85%
Torsional Strength	Approximately equal to Tensile Strength	
Compressive Strength, p.s.i.	200,000	250,000

Malleable's toughness is illustrated in a severe test conducted by a manufacturer of cab-over-engine trucks. To be absolutely sure of the strength and toughness of a variety of components in the cab, including the critical Malleable iron cab support hinges, a truck was crashed at high speed into a barricade of ice. Result—no hinge damage, even though the truck was seriously battered.

Service-Demonstrated Toughness

Highway railing posts demonstrate Malleable castings' use where impact resistance is critical. As an example, thousands of Malleable railing posts line the Connecticut State Thruway. The State Highway Department reports that there have been no failures of the Malleable iron posts although other materials have failed in several cases.

It is also because of Malleable's toughness that so many of the highest quality hand tools are made of Malleable iron. One leading tool manufacturer tests the quality of its pipe wrenches by using a trick well known as the best way to break a wrench. The wrench jaws are put on a rigid bar, a long pipe is slipped on the handle, and the tester heaves his weight downward on the pipe. Because of their confidence in Malleable's toughness, this company unconditionally guarantees every Malleable wrench housing against distortion and breakage. Another hardware manufacturer makes a similar guarantee against breakage on its line of Malleable vises.

But Malleable iron's proven performance in field service is only one reason for its wide use. To this, you must add Malleable's low first cost, design flexibility, and excellent machinability. This combination offers unique advantages over other metals.

Design and Production Assistance Available

To assist in the use of Malleable castings, a special bulletin on toughness—Data Unit No. 105—is available from the Malleable Castings Council, Union Commerce Building, Cleveland 14, O. These bulletins and engineering and planning assistance are also readily available to you from any member of the Malleable Castings Council.

These companies are members of the

MALLEABLE CASTINGS COUNCIL

CONNECTICUT
Connecticut Mall. Castings Co., New Haven 6
Eastern Malleable Iron Co., Naugatuck
New Haven Malleable Iron Co., New Haven 4

DELAWARE
Eastern Malleable Iron Co., Wilmington 99

ILLINOIS
Central Fdry. Div., Gen. Motors, Danville
Chicago Malleable Castings Co., Chicago 43
Moline Malleable Iron Co., St. Charles
National Mall. and Steel Castings Co., Cicero 50
Peoria Malleable Castings Co., Peoria 1
Wagner Castings Company, Decatur

INDIANA
Link-Belt Company, Indianapolis 6
Muncie Malleable Foundry Co., Muncie
Terre Haute Mall. & Mfg. Corp., Terre Haute

MASSACHUSETTS
Belcher Malleable Iron Co., Easton

MICHIGAN
Albion Malleable Iron Co., Albion
Auto Specialties Mfg. Co., Saint Joseph
Cadillac Malleable Iron Co., Cadillac
Central Fdry. Div., Gen. Motors, Saginaw

MINNESOTA
Northern Malleable Iron Co., St. Paul 6

NEW HAMPSHIRE
Laconia Malleable Iron Co., Laconia

NEW JERSEY
Meeker Foundry Company, Newark 4

NEW YORK
Acme Steel & Mall. Iron Works, Buffalo 7
Frazer & Jones Company Division Eastern Malleable Iron Co., Solvay
Oriskany Malleable Iron Co., Inc., Oriskany
Westmoreland Mall. Iron Co., Westmoreland

OHIO
American Malleable Castings Co., Marion
Canton Malleable Iron Co., Canton 5
Central Fdry. Div., Gen. Motors, Defiance
Dayton Mall. Iron Co., Ironton Div., Ironton
Dayton Mall. Iron Co., Ohio Mall. Div., Columbus 16
Maumee Malleable Castings Co., Toledo 5
National Mall. and Steel Castings Co., Cleveland 6

PENNSYLVANIA
Buck Iron Company, Inc., Philadelphia 22
Erie Malleable Iron Co., Erie
Lancaster Malleable Castings Co., Lancaster
Lehigh Foundries Company, Easton
Meadville Malleable Iron Co., Meadville
Pennsylvania Malleable Iron Corp., Lancaster

TEXAS
Texas Foundries, Inc., Lufkin

WEST VIRGINIA
West Virginia Mall. Iron Co., Point Pleasant

WISCONSIN
Belle City Malleable Iron Co., Racine
Chain Belt Company, Milwaukee 1
Federal Malleable Company, West Allis 14
Kirsh Foundry Inc., Beaver Dam
Lakeside Malleable Castings Co., Racine
Milwaukee Malleable & Grey Iron Works, Milwaukee 46

Gets 40% savings in coolant costs by change to

Standard's Transparent Coolant

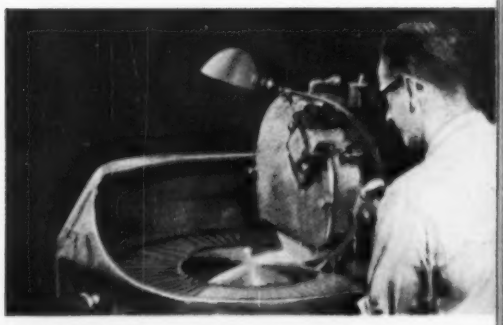
ARGON Oil No. 4

Chicago Saws, Inc., realizes other benefits in switch to this Standard Oil product

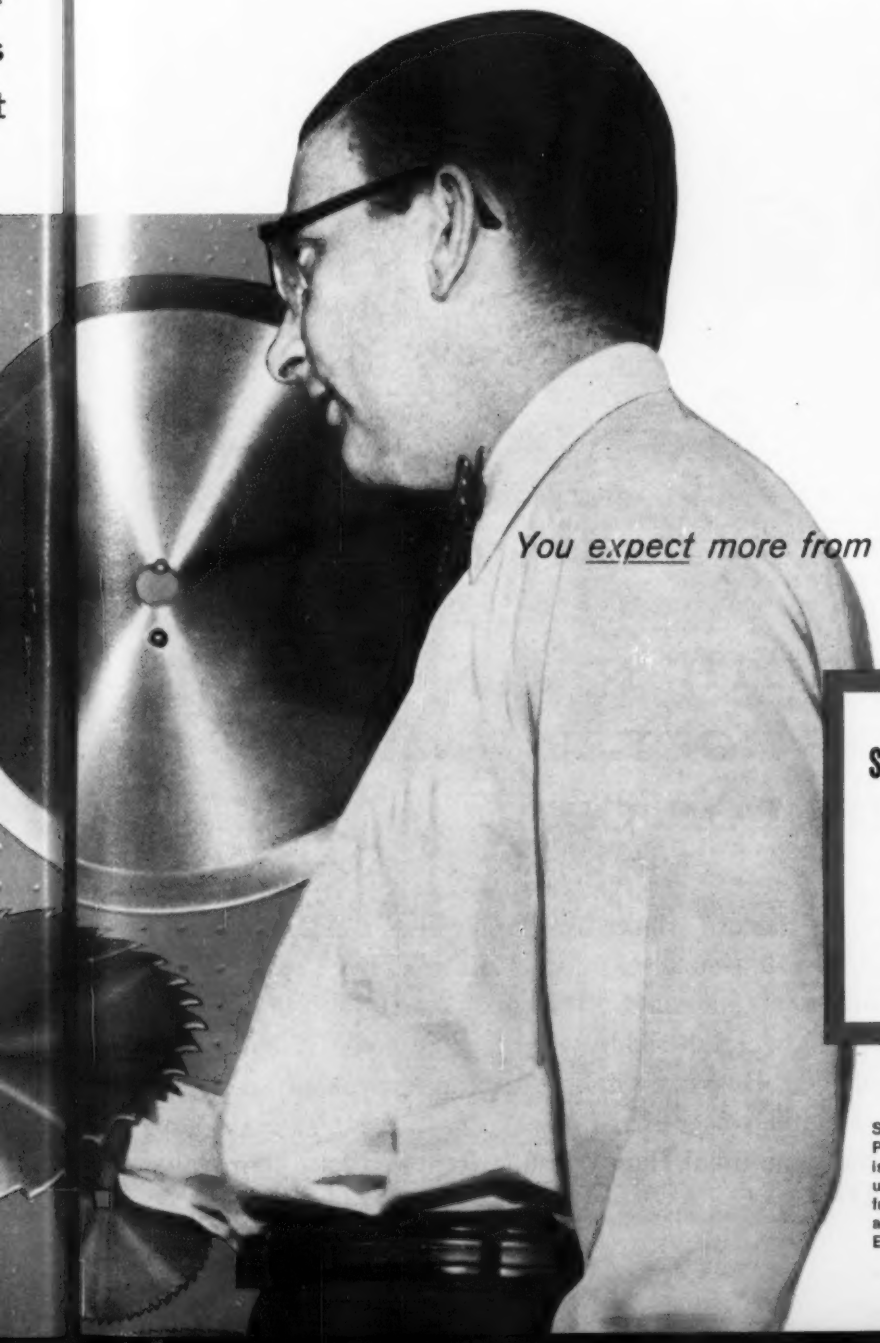
Situation: It all started when a Standard Oil lubrication specialist recommended ARGON Oil No. 4, Standard's transparent coolant to Chicago Saws for use in their grinding operations. This manufacturer of rotary saw blades decided to give it a try. They knew the product was the result of more than three years' work in Standard's research laboratory, and that it had been extensively field tested.

What happened: Using ARGON Oil No. 4 in 100 : 1 concentration, Chicago Saws was able to reduce coolant costs 40%. They also found the work could be seen more clearly when using this coolant. There was less wheel loading. They also discovered the coolant didn't foam and that its exceptional ability to carry off heat resulted in cooler operation. Faster cuts were obtained with finer wheels. Tolerances were easier to hold. Better finishes were obtained. Wheel dressings were less frequent.

What you can do: Get more information about ARGON Oil No. 4 transparent coolant. Call the Standard Oil lubrication specialist near you in any of the 15 Midwest or Rocky Mountain states. Or write: **Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Ill.**



Using ARGON Oil No. 4, Chicago Saws gets better finish at savings of 40% over other coolants tried. Operator is using .004" cut on heat treated Rockwell 60 C steel.



You expect more from **STANDARD** *and you get it!*

Quick facts about

Standard's Transparent Coolant

ARGON Oil No. 4

- Clear, transparent fluid
- All chemical. Does not support bacteria growth
- Unaffected by humidity
- Nonfoaming
- Fire resistant
- Odorless

Standard's Bob Stark and Chicago Saws' vice president Paul Bostrom discuss blades and coolants. Bob Stark is well qualified to work with manufacturers on the use of metalworking coolants. Bob has a chemistry degree from Illinois College plus three years' experience at Standard. He has completed the Standard Oil Sales Engineering School course.

DOW

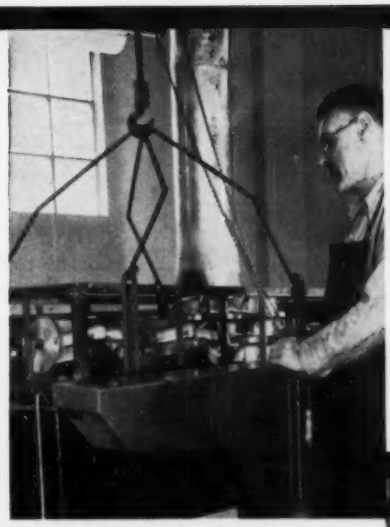
metal cleaning report no. 2

case histories from your Distributor of Dow Solvents

Flo-ball rocket valves are cleaned ultra-fine with Chlorothene. Fire hazards and toxicity problems are virtually nonexistent.

CHLOROTHENE MAKES ROCKET VALVES READY FOR ORBIT

Livingston, New Jersey—An Eastern concern in the business of manufacturing "flo-ball" valves for rockets was faced with a metal cleaning problem. They used an ultrasonic bath to remove grease and other contaminants. Problem: Toxicity and fire hazard. Distributor's answer: Chlorothene® (Dow 1,1,1-trichloroethane, inhibited). Chlorothene did the ultra-fine cleaning job demanded. But, most important, the low toxicity rating of Chlorothene plus the fact that this versatile solvent has no fire or flash point solved the fire hazard and handling problems at the same time! Happy result: Renewed long term valve contract for the New Jersey firm.



COKING PROBLEM ELIMINATED

Machine company tried a number of brands of trichloroethylene to clean small machine parts made of brass, steel and aluminum. With each brand tried they experienced serious coking problems in their vapor degreaser. Periodically it had to be shut down for two or three days while the coal-like residue was chiseled out. The Dow solvents distributor in the area suggested NEU-TRI®, Dow's super-stable neutral type of trichloroethylene. NEU-TRI was tested for thirty days. At the end of that time, no coking deposits had appeared, and NEU-TRI has done the job ever since!

CIRCUITOUS ROUTE TO CLEAN CIRCUITS

St. Paul, Minnesota—Electronics manufacturer had to clean rosin flux from electric circuits. Trichloroethylene in this vapor degreasing operation was too slow and expensive. They had previously tried ultrasonics, but that process took the finish off the circuits. The fast, economic answer: Chlorothene, Dow's safer, more effective cold cleaning solvent. Chlorothene speeded production, did not injure the finish, reduced cleaning costs 16%! Now they complete the circuit on time!

DOW SOLVENTS MEN KNOW EQUIPMENT, TOO!

Paris, Illinois—An electric parts manufacturer had a problem: excessive vapors from his perchloroethylene degreasing operation. Result: solvent loss, worker discomfort, decreased production. A team from Dow and the distributor carefully studied the degreasing equipment. By changing adjustments on the machinery, the problem was solved. The condenser capacity was inadequate to condense and control the vapor. The point: Technical service men from Dow and its solvents distributors have cut their teeth on solvent and equipment problems. Their purpose in the field is to help customers. When their services are used properly, they save companies money!

Time and time again, Dow solvents distributors help manufacturers improve cleaning and stripping operations. And for two good reasons: (1) Dow offers the widest line of chlorinated solvents for modern industry; (2) Dow backs its distributors to the hilt with technical information and on-the-job help. Chances are good that one of the many Dow industrial solvents can help smooth out your operations, too. Dow solvents are made to high purity standards and each is designed to do a specific job and do it well. For help on your metal cleaning problems call on the nearby Dow solvents distributor. His name is listed on the next page.

THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN

FREE . . .
TECHNICAL SERVICE
on 24-hour notice

Your distributor of Dow solvents will gladly help you with any problems you are experiencing with metal cleaning solvents. He can have a trained solvents specialist en route to your plant within 24 hours after your call is received!

Ask your Dow solvents distributor for details.

CHLOROTHENE®
TRICHLOROETHYLENE
PERCHLOROETHYLENE
METHYLENE CHLORIDE

See Your Distributor of Dow Solvents First!

FOR HELPFUL METAL CLEANING INFORMATION
get in touch with your Dow Solvents Distributor

DOW

LETTER KEYS: (C)—Chlorothene®; **(M)**—Methylene Chloride; **(P)**—Perchloroethylene (Industrial); **(T)**—Trichloroethylene

ALABAMA
BIRMINGHAM—Wittichen Chemical Company **(C M P)**
BIRMINGHAM—F. H. Ross and Company **(C M P T)**
MOBILE—Barada and Page, Inc. **(C M)**
MOBILE—McKesson & Robbins, Inc. **(C M P T)**
MOBILE—F. H. Ross and Company **(C M P)**
MONTGOMERY—Wittichen Chemical Company **(C M P)**

ARIZONA
PHOENIX—Braun Chemical Company **(C M P T)**
PHOENIX—Western Chemical Company **(C M P)**
TUCSON—Western Chemical Company **(C M P)**

CALIFORNIA
LOS ANGELES—Braun Chemical Company **(C M P T)**
LOS ANGELES—McKesson, Mefford Chemical Division **(P)**
LOS ANGELES—Pemaco, Inc. **(P T)**
OAKLAND—B. N. Meacham Company **(C)**
SAN DIEGO—Braun Chemical Company **(C M P T)**
SAN DIEGO—Buel Town Company **(T)**
SAN FRANCISCO—Braun-Knecht-Heimann Co. **(C M P T)**
SAN FRANCISCO—G. N. Meacham Company **(C)**
SOUTH GATE—American Mineral Spirits **(P)**

COLORADO
DENVER—Braun-Knecht-Heimann Company **(C M)**
DENVER—Chemical Sales Company **(C M P T)**
DENVER—McKesson & Robbins, Inc. **(C M P T)**
DENVER—Mine and Smelter Supply Company **(C M P T)**
GRAND JUNCTION—C. D. Smith Co., Chemical Div. **(C P T)**

CONNECTICUT
NEW HAVEN—H. Krevit and Company, Inc. **(P T)**
SHELTON—Axton-Cross Company **(C M P T)**
SOUTH NORWALK—McKesson and Robbins, Inc. **(C M P T)**
SOUTH NORWALK—Guard-All Chemical Company **(P T)**

FLORIDA
JACKSONVILLE—F. H. Ross and Company **(C M P T)**
JACKSONVILLE—Amica Burnett Chemical Co. **(C M P T)**
MIAMI—Amica Burnett Chemical Company **(C M P T)**
MIAMI—Biscayne Chemical Laboratories **(C M P T)**
ORLANDO—Atlantic Chemicals, Inc. **(C M P T)**
TAMPA—Atlantic Chemicals, Inc. **(C M P T)**

GEORGIA
ATLANTA—Chapman Chemical Company **(T)**
ATLANTA—McKesson and Robbins, Inc. **(C M P T)**
ATLANTA—F. H. Ross and Company **(C M P T)**
ATLANTA—Southern States Chemical Company **(C M P T)**
BIRMINGHAM—Chapman Chemical Company **(T)**
COLUMBUS—F. H. Ross and Company **(C M T)**
DUBLIN—Textile Aniline Chemical Company **(T)**

IDAHO
BOISE—Van Waters and Rogers, Inc. **(C M P)**

ILLINOIS
AURORA—River Valley Chemicals Inc. **(C M P T)**
CHICAGO—Central Solvents and Chemicals **(C M P)**
CHICAGO—C. P. Hall Company **(C M P T)**
CHICAGO—Keystone Aniline and Chemical Co. **(C P)**
CHICAGO—McKesson & Robbins, Inc. **(C M P T)**
CHICAGO—Joseph Turner and Company **(C M P T)**
DECATUR—McKesson & Robbins, Inc. **(C M P T)**
EFFINGHAM—Wabash Independent Oil Company **(C P T)**
PEORIA—McKesson & Robbins, Inc. **(C M P T)**
ROCKFORD—Industrial Oil and Chemical Company **(C)**
ROCKFORD—Viking Chemical Company **(C M P T)**

INDIANA
EVANSVILLE—Charles Leich and Company **(P)**
FT. WAYNE—Hoosier Solvents and Chemicals **(C M P)**
FT. WAYNE—Inland Chemical Corporation **(C M P)**
HAMMOND—Inland Chemical Corporation **(C M P T)**
INDIANAPOLIS—Hoosier Solvents and Chemicals **(C M P)**
INDIANAPOLIS—Wm. Lynn Chemical Company **(C M P)**
INDIANAPOLIS—Lynn Solvents Corporation **(T)**
INDIANAPOLIS—Ulrich Chemical Company, Inc. **(T)**
KOKOMO—Plating Products, Inc. **(P T)**
LOGANSPORT—Plating Products, Inc. **(P T)**
SOUTH BEND—Inland Chemical Corporation **(C M P T)**
SOUTH BEND—Stevens Oil Company **(C M P)**

IOWA
BETTENDORF—Barton Naptha Corporation **(C M P T)**
BURLINGTON—McKesson and Robbins, Inc. **(C M P T)**
CEDAR RAPIDS—McKesson and Robbins, Inc. **(C M P T)**
COUNCIL BLUFFS—Barton Solvents, Inc. **(C M P T)**
DAVENPORT—McKesson & Robbins, Inc. **(C M T)**
DES MOINES—Barton Naptha Company **(C M P T)**
SIOUX CITY—McKesson and Robbins, Inc. **(P)**
SUMNER—Overton Chemical Sales **(C)**

KANSAS
WICHITA—Barada and Page, Inc. **(C M)**
WICHITA—Reid Supply Company **(C P T)**

KENTUCKY
LOUISVILLE—Dixie Solvents and Chemicals **(C M P)**
LOUISVILLE—Gans Chemical and Supply Company **(P)**
LOUISVILLE—McKesson and Robbins, Inc. **(C M P T)**

LOUISIANA
BATON ROUGE—Barada & Page, Inc. **(C)**
LAKE CHARLES—Barada and Page, Inc. **(C M)**
NEW ORLEANS—Barada & Page, Inc. **(C)**
NEW ORLEANS—Southern Solvents and Chemicals **(C M P T)**

MAINE
LEWISTON—Polar Chemical Company **(C M P T)**

MARYLAND
BALTIMORE—B. J. Howard Company **(C M P T)**
BALTIMORE—Leidy Chemicals Corporation **(C M P)**
BALTIMORE—Sailer Chemicals **(C)**
BALTIMORE—Tilley Chemical Company **(T)**

MASSACHUSETTS
BOSTON—Howe and French, Inc. **(C M)**
BOSTON—Linder and Company, Inc. **(C M P T)**
BOSTON—McKesson and Robbins, Inc. **(C M P T)**
EVERETT—Sessions-Gifford Co., Inc. **(C M P T)**
FRAMINGHAM—Axton-Cross Corp. of Mass. **(C P T)**
HINGHAM—Stephen-Roger, Incorporated **(C M P T)**
HOLYOKE—Eastern Chemicals, Inc. **(M)**
SPRINGFIELD—Chemical Corporation **(C M P T)**
SPRINGFIELD—Hampden Color and Chemical Co. **(C M P)**
STONEHAM—George Mann & Co. **(C M P T)**
WORCESTER—George H. Clark and Co. **(C M P T)**

MICHIGAN
DETROIT—Eaton Chemical and Dyestuff **(C M)**
DETROIT—Manpro Corporation **(C M P T)**
DETROIT—McKesson and Robbins, Inc. **(C M P T)**
DETROIT—Western Solvents and Chemicals **(C M P)**
DETROIT—Whitfield Chemical Company **(P)**
EAST DETROIT—Sherwood Chemical Company **(P)**
ESCANABA—Haviland Products Company **(C M P)**
FERNDALE—Manpro Corporation **(C M P T)**
GRAND RAPIDS—P. B. Gast and Sons Company **(C)**
GRAND RAPIDS—Haviland Products Company **(C M)**
GRAND RAPIDS—Wolverine Solvents and Chemicals Co. **(C M P)**
LANSING—Carrier Stephens Company **(C P)**
LANSING—Wheaton Chemical Company **(C P T)**
LUDINGTON—P. B. Gast and Sons Company **(C)**

MINNESOTA
MINNEAPOLIS—W. H. Barber Company **(P T)**
MINNEAPOLIS—McKesson and Robbins, Inc. **(C M P T)**
MINNEAPOLIS—Tripoli Refining Corporation **(M P T)**
ST. PAUL—Lyons Chemicals, Inc. **(C M P)**

MISSISSIPPI
JACKSON—F. H. Ross and Company **(C M P)**

MISSOURI
KANSAS CITY—Barada and Page, Inc. **(C M)**
KANSAS CITY—Missouri Solvents and Chemicals **(C M P)**
KANSAS CITY—Sherwood and Company, Inc. **(C M P T)**
ST. LOUIS—Barada and Page, Inc. **(C M)**
ST. LOUIS—Independent Oil Company **(C M P T)**
ST. LOUIS—McKesson and Robbins, Inc. **(C M P T)**
ST. LOUIS—G. S. Robins and Company **(C M P)**
ST. LOUIS—St. Louis Solvents and Chemicals **(C P T)**
ST. LOUIS—Missouri Solvents and Chemicals **(C M P)**

NEBRASKA
OMAHA—Barton Solvents, Inc. **(C M P T)**
OMAHA—McKesson and Robbins, Inc. **(C M P T)**

NEW JERSEY
BLOOMFIELD—McKesson & Robbins, Inc. **(C M P T)**
CAMDEN—Callahan Chemical Company **(M P T)**
EAST PATERSON—Aetna Color and Chemical Company **(C M P T)**
MURRAY HILL—American Mineral Spirits **(C M P T)**
NEWARK—American Oil and Supply **(C P)**
NEWARK—National Oil and Supply Company **(C M P T)**
PALISADE PARK—Philip A. Hunt Company **(C)**
VINELAND—Lirio Chemical Company **(C T)**

NEW MEXICO
ALBUQUERQUE—Braun Chemical Company **(C M P T)**
ALBUQUERQUE—Edmunds Chemical Company **(C M P T)**

NEW YORK
ALBANY—Eastern Chemical **(C M P)**
ATHENS—Spick Products Company **(P T)**
BINGHAMTON—Collier Chem. **(C M)**
BRONX—Elco Solvents Corporation **(M P T)**
BROOKLYN—Enequist Chemical Company **(C P)**
BUFFALO—Buffalo Solvents and Chemicals **(C M P)**
BUFFALO—Chemical Sales Corporation **(C M P T)**
BUFFALO—McKesson and Robbins, Inc. **(C M P T)**
EDGEMERE—Hogan Industrial Supply **(P T)**
GLOVERSVILLE—Eastern Chemicals, S. H. Ireland Div. **(C M)**
KEARNY—American Chemicals, Incorporated **(C M P T)**
LONG ISLAND CITY—Peerless Oil and Chemical **(C M P T)**
NEW YORK—American Chemicals, Inc. **(C M P T)**
NEW YORK—McKesson and Robbins, Inc. **(C M P T)**
POUGHKEEPSIE—Duso Chemical Company **(C)**
RENSSELAER—Eastern Chemicals, Inc. **(C M)**
ROCHESTER—Chemical Sales Corporation **(C M P T)**
SYRACUSE—Eastern Chemicals, Inc. **(C M)**
UTICA—Monarch Laboratories **(C M P)**

NORTH CAROLINA
CHARLOTTE—F. H. Ross and Company, Inc. **(C M P T)**
CHARLOTTE—Moreland Chemical Company **(C M P T)**
CHARLOTTE—Southern States Chemical Co. **(C M P T)**
GREENSBORO—F. H. Ross and Company, Inc. **(C M P T)**

OHIO
AKRON—Farley Solvents Company **(C M P T)**
AKRON—C. P. Hall Company **(C P T)**
CANTON—Bison Corporation **(C P)**
CINCINNATI—Amsco Solvents and Chemicals **(C M P)**
CINCINNATI—Chipman Supply Company **(T)**
CINCINNATI—Herbert Chemical Company **(P T)**
CINCINNATI—McKesson and Robbins, Inc. **(C M P T)**
CLEVELAND—Man-Gill Chemical Company **(C P T)**
CLEVELAND—McKesson and Robbins, Inc. **(C M P T)**
CLEVELAND—National Solvents Corporation **(C P T)**
CLEVELAND—Ohio Solvents and Chemicals, Inc. **(C M P)**
CLEVELAND—R. W. Renton Company **(C P T)**
COLUMBUS—McKesson and Robbins, Inc. **(C M P T)**
DAYTON—Industrial Chemical Products Co. **(C P T)**
DAYTON—Ottoson Solvents, Inc. **(T)**
LIMA—Thomson Chemical Company **(C P T)**
TOLEDO—Inland Chemical Co. **(C M P)**
TOLEDO—Toledo Solvents and Chemicals **(C M P)**
TOLEDO—M. L. Wilcox Company **(C P T)**
YOUNGSTOWN—Rhiel Supply Company **(C M P T)**

OKLAHOMA
OKLAHOMA CITY—Barada and Page, Inc. **(C M)**
TULSA—Barada and Page, Inc. **(C M)**
TULSA—Chemical Products, Inc. **(C M P T)**

OREGON
PORTLAND—Van Waters and Rogers **(C M P)**

PENNSYLVANIA
CONSHOHOCKEN—American Mineral Spirits **(C M P T)**
EASTON—Lehigh Valley Chemical Company **(C M P T)**
ERIE—Monarch Laboratories **(T)**
McKEES ROCK—Apex Soap and Sanitary Corp. **(C P T)**
PHILADELPHIA—Alex C. Fergusson Company **(C P T)**
PHILADELPHIA—McKesson and Robbins, Inc. **(C M P T)**
PHILADELPHIA—Phillips and Jacobs, Inc. **(C M)**
PHILADELPHIA—Pioneer Salt Company **(C M P T)**
PHILADELPHIA—George Senn, Inc. **(C M P T)**
PITTSBURGH—Carmac Chemical Company, Inc. **(C P)**
PITTSBURGH—Carmon-Pittsburgh Company **(C P T)**
PITTSBURGH—Dacar Chemical Products Company **(C P T)**
PITTSBURGH—Ft. Pitt Chemical Company **(C M P)**
PITTSBURGH—McKesson and Robbins, Inc. **(C M P T)**
READING—R. W. Eaken, Inc. **(C P T)**
READING—Textile Chemical Company **(C P)**
SCRANTON—Scranton Chemical Company **(C P T)**
YORK—Industrial Solvents and Chemicals **(C P T)**

RHODE ISLAND
PROVIDENCE—George Mann and Company **(C M P T)**
PROVIDENCE—Sessions-Gifford Company, Inc. **(C M P T)**

SOUTH CAROLINA
CHARLESTON—Burris Chemical Company **(C P T)**
GREENVILLE—F. H. Ross & Company **(C M P T)**
GREENVILLE—Southern States Chemical Co. **(C M P T)**
SPARTANBURG—Moreland Chemical Company, Inc. **(C M P T)**

TENNESSEE
CHATTANOOGA—Chapman Chemical Co. **(C M P T)**
CHATTANOOGA—Wilson Sales Company **(C M P T)**
KINGSPORT—Chem-I-Dent, Inc. **(C P T)**
MEMPHIS—Chapman Chemical Company **(C M P T)**
MEMPHIS—C. P. Hall Company **(C M P T)**
MEMPHIS—Ideal Chemical and Supply Co. **(C M P T)**
NASHVILLE—Chapman Chemical Company **(C M P T)**
NASHVILLE—Wilson Sales Company **(C M P T)**

TEXAS
AMARILLO—State Chemical Company **(C M P T)**
AUSTIN—R. M. Hughes Company, Inc. **(C M P T)**
BEAUMONT—Arthur Dooley and Son **(C M P T)**
CORPUS CHRISTI—Barada and Page, Inc. **(C M)**
DALLAS—Barada and Page, Inc. **(C M)**
DALLAS—McKesson & Robbins, Inc. **(C M P T)**
DALLAS—Texas Solvents and Chemicals Co. **(C)**
DALLAS—Van Waters and Rogers, Inc. **(C M P T)**
EL PASO—Baron Chemical Company **(C M P T)**
EL PASO—Braun Chemical Company **(C M P T)**
EL PASO—Mine and Smelter Supply Company **(P)**
FORT WORTH—Barada and Page, Inc. **(C M)**
FORT WORTH—Worth Chemical Products Co. **(C M P)**
HOUSTON—Barada and Page, Inc. **(C M)**
HOUSTON—W. H. Curtain and Company **(P)**
HOUSTON—Dixie Chemical Company **(C M P T)**
HOUSTON—R. M. Hughes Company, Inc. **(C M P T)**
HOUSTON—McKesson, Texas Chemical Division **(C M P T)**
HOUSTON—Texas Solvents and Chemicals Co. **(C M P)**
HOUSTON—Van Waters and Rogers, Inc. **(C M P T)**
LUBBOCK—State Chemical Company **(C M P T)**
MIDLAND—State Chemical Company **(C M P T)**
ODESSA—Barada and Page, Inc. **(C M)**
SAN ANTONIO—R. M. Hughes Company, Inc. **(C M P T)**
SAN ANTONIO—McKesson and Robbins, Inc. **(C M P T)**

UTAH
SALT LAKE CITY—Braun-Knecht-Heimann Co. **(C M P T)**

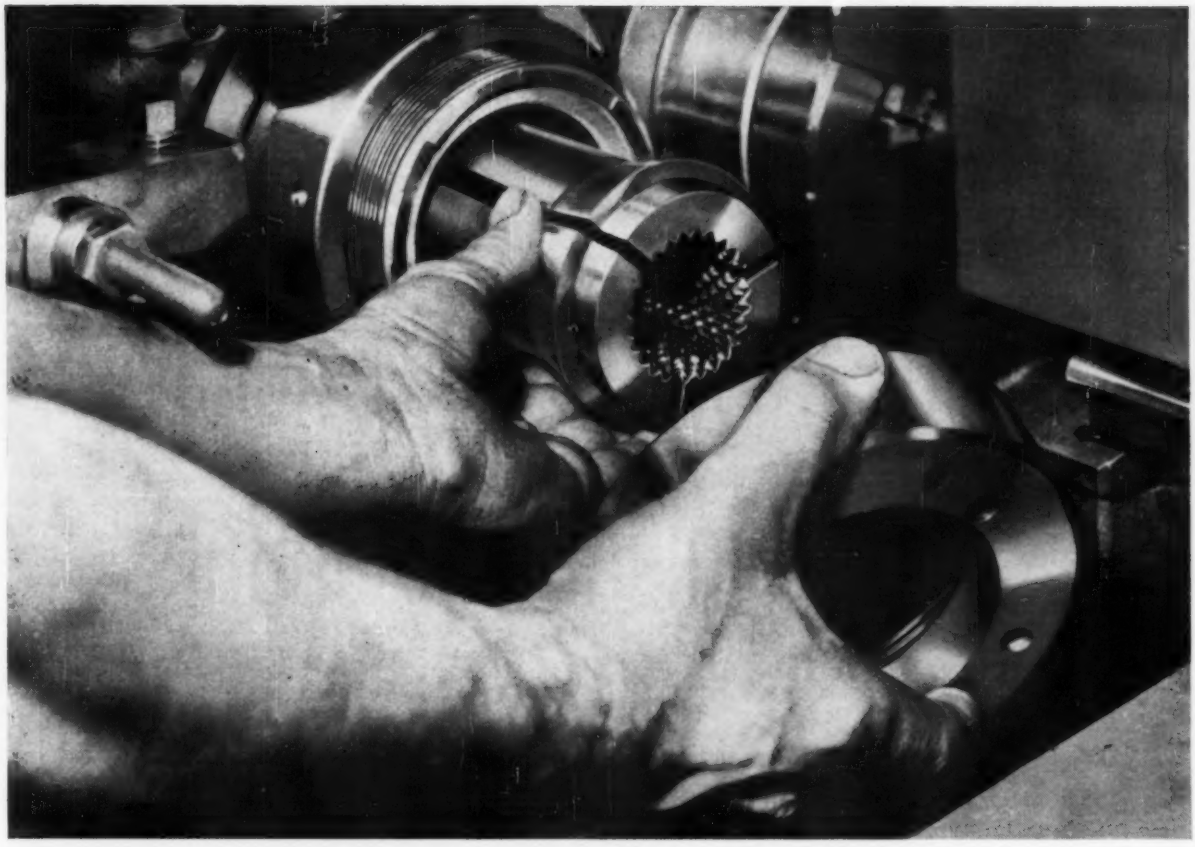
VIRGINIA
NORFOLK—Taylor Salt and Chemical Company **(C P T)**
RICHMOND—Phipps and Bird, Inc. **(C M P)**
ROANOKE—Havnaer Supply Company **(C M P T)**

WASHINGTON
SEATTLE—Van Waters and Rogers, Inc. **(C M P)**
SPOKANE—Van Waters and Rogers, Inc. **(C M P)**

WEST VIRGINIA
CHARLESTON—B. Preiser and Company **(C M P T)**
FAIRMONT—Fairmont Machinery, Fairmont Supply **(C P T)**
HUNTINGTON—Cabell Chemical Company **(C P T)**

WISCONSIN
CHIPPEWA FALLS—Lyons Chemical **(C M P T)**
LA CROSSE—North Central Chemical, Inc. **(M P T)**
LA CROSSE—Wisconsin Solvents & Chemicals Corp. **(C M P)**
MADISON—North Central Chemicals **(C M P T)**
MILWAUKEE—McKesson and Robbins, Inc. **(C M P T)**
MILWAUKEE—Wisconsin Solvents and Chemicals **(C M P)**
WAUKESHA—Fred Portz and Son **(C T)**

See Your Dow Solvents Distributor First!



Inspecting 4615 nickel alloy steel spindle in Greenlee 6-Spindle 2" Automatic Bar Machine assembled with collet and 4615 steel spindle nose nut. Greenlee Bros. & Co., Rockford, Ill., also produces 1" and 1⅝" bar machines.

How Greenlee uses two general purpose nickel alloy steels to keep precision machines precise

1...case-hardening 4615 for wearing parts 2...through-hardening 4340 for stressed parts

Do you know that by varying heat treatment of just two nickel alloy steels — 4615 for case-hardening, 4340 for through-hardening — you can give desired hardness and strength to most heavy-duty machine tool parts?

For proof — consider the Greenlee 2-inch automatic bar machine above.

Each spindle is 4615 steel, carburized and hardened to Rockwell C 62-64. The hard case holds down wear or loss of running accuracy, even though spindles turn directly on 5 speed ball bearings. High speed torsional stresses are taken in stride by the tough, strong core. The low distortion characteristics of 4615 steel during heat treatment help to keep true-running accuracy.

4615 steel also gives the same excellent wearing qualities in spindle nose nuts, idler gears, bushings and sleeves.

4340 steel strengthens highly stressed parts

Through-hardening 4340 nickel alloy steel is the off-the-shelf steel Greenlee uses for heavily stressed parts — for example, certain shafts heat treated up to 225,000 psi tensile strength.

Stocked in Steel Service Centers across the country

Versatile 4615 and 4340 nickel alloy steels are available for quick delivery from Steel Service Centers throughout the country . . . ask us for a list of centers where you can buy them. Write us, too, for specific questions concerning these two steels.

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street INCO New York 5, N. Y.

INCO NICKEL

NICKEL MAKES ALLOYS PERFORM BETTER LONGER

Republic's CENTURY 100 SERIES provides..

High Strength, Stress Relieved, Cold Finished Steel Bars Best Suited To Your Requirements

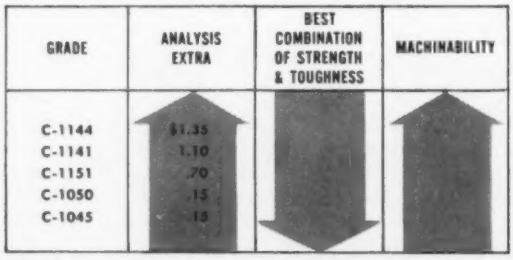
Now, you can select from a family of five grades of steel, a specially processed, cold finished, stress relieved bar product to meet the specific requirements of your steel parts production calling for high strength with varying degrees of machinability.

Each grade in Republic's CENTURY SERIES – C-1144, C-1141, C-1151, C-1050, and C-1045 – provides a *minimum yield strength of 100,000 psi.* Machinability ratings for the various grades are presented in descending order – from C-1144 for best machinability, to C-1045 where maximum machinability is not required.

Republic's over-all policy has always been to suggest the least expensive grade of steel that will adequately meet the mechanical requirements of the application and the degree of machinability required.

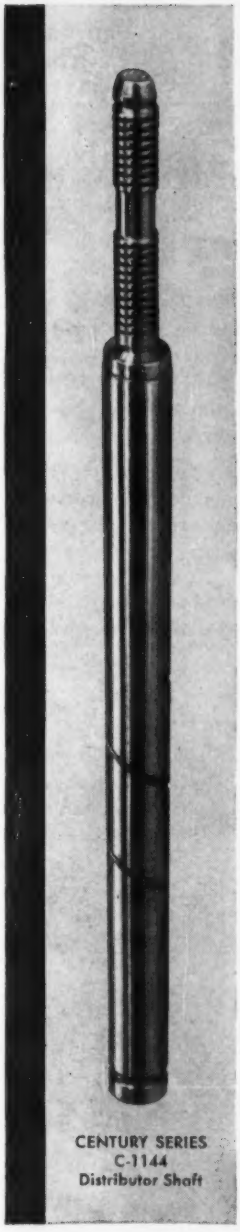
The CENTURY SERIES makes it possible to achieve considerable savings by selecting the grade best suited to a specific requirement. For example, C-1144 would be the proper choice for a part requiring high strength with maximum machinability. A lower sulphur grade, such as C-1141 or C-1151, can be considered where maximum machinability is not required. If machinability is a minor factor, C-1050 or C-1045 may be considered.

As sulphur decreases, toughness and resistance to shock increase. Therefore, it is frequently possible to obtain a *better strength/toughness ratio at lower cost* by using one of the less expensive, lower sulphur steels as indicated on the chart.

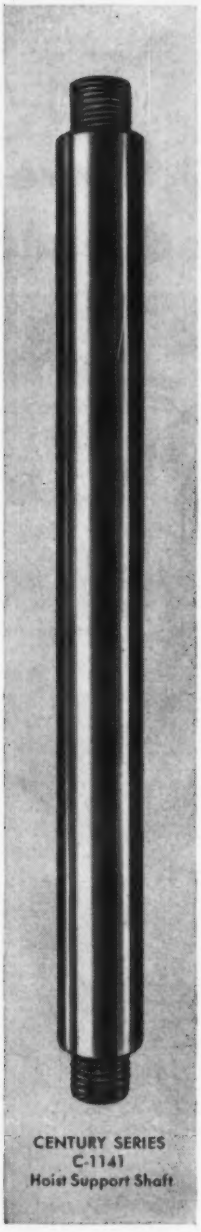


Which grade is best for your production? Republic offers the services of expert metallurgists – field, mill, and laboratory – also machining specialists to work directly with your personnel in selection, application, and processing of the right grade for your steel parts production.

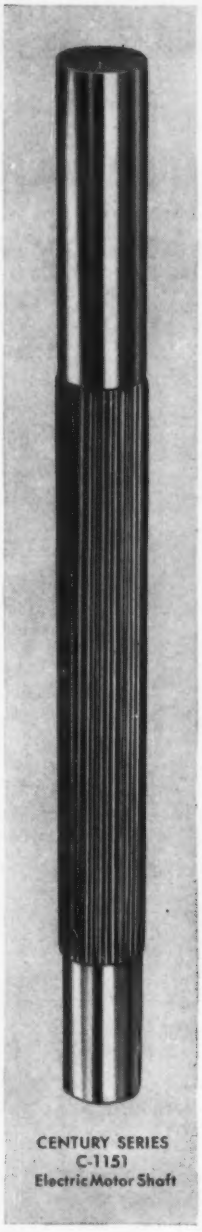
FREE BOOK provides the basic facts you need to determine where Republic's CENTURY SERIES may help you save time and money in the production of steel parts. Mail the coupon for your copy.



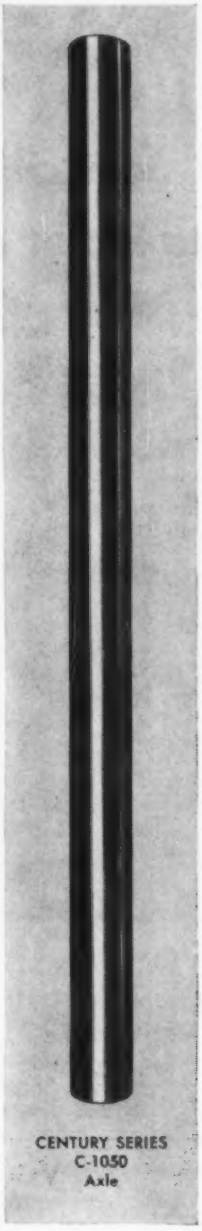
CENTURY SERIES
C-1144
Distributor Shaft



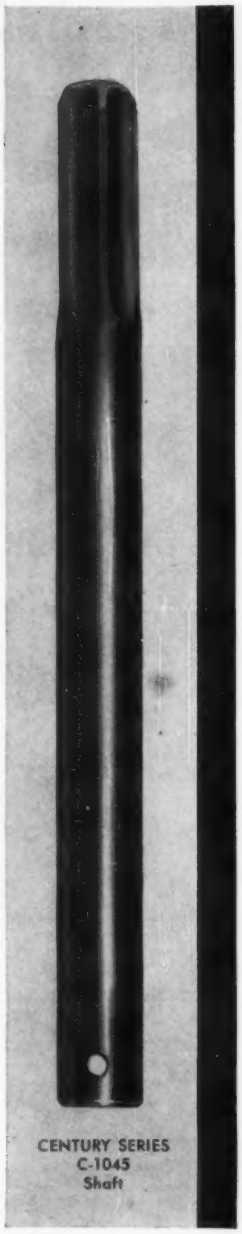
CENTURY SERIES
C-1141
Hoist Support Shaft



CENTURY SERIES
C-1151
Electric Motor Shaft



CENTURY SERIES
C-1050
Axle



CENTURY SERIES
C-1045
Shaft

REPUBLIC STEEL

World's Widest Range of Standard Steels and Steel Products

REPUBLIC STEEL CORPORATION
DEPT. IA -6871
1441 REPUBLIC BUILDING • CLEVELAND 1, OHIO

Please send Free Book on CENTURY SERIES

Name_____ Title_____

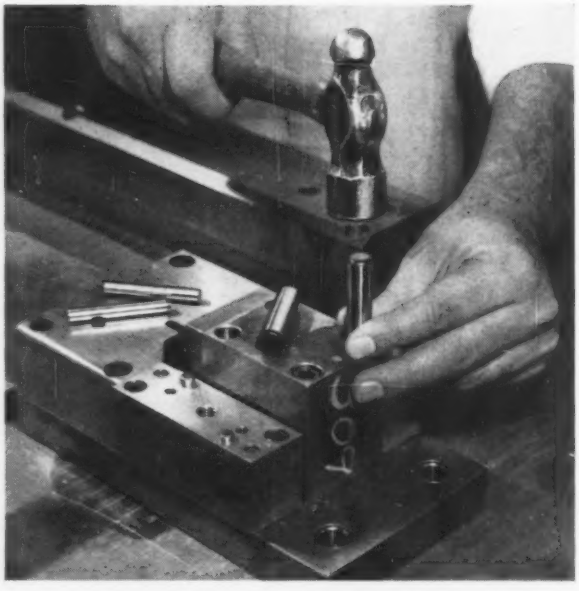
Company_____

Address_____

City_____ Zone____ State_____

SPS RELIABILITY / *A dynamic standard of predictable performance*

Precision of UNBRAKO Dowel Pins cuts cost in many applications



Precise tolerances of ±0.0001 inch and consistently uniform physical characteristics, maintained by automatic gaging, and atmosphere-controlled heat treatment, make UNBRAKO Dowel Pins reliable cost-cutters in many different applications.

These precision products are so accurate that many plants use them as plug gages in numerous production operations. Others use them as guide pins, stops, wrist pins, hinges and shafts; as position locators on indexing machines; as feeler gages in assembly work; as valves and valve plungers on hydraulic equipment; as fasteners for laminated sections and machine parts; as roller bearings in casters and truck wheels.

Your authorized SPS distributor stocks UNBRAKO Dowel Pins in two types: Blue Label Pins .0002 inch oversize to meet nominal press fit requirements; and Red Label Pins .001 inch oversize for use as repair pins.

See your nearest distributor for complete details. Or write SPS —manufacturer of precision threaded industrial fasteners and allied products in many metals, including titanium.

◀ Typical of the many applications of UNBRAKO Dowel Pins is this die. Here the pins are used to position laminated sections.

Nominal Diam.	STANDARD (.0002 inch over diameter listed)		OVERSIZE (.001 inch over diameter listed)		Point Diam.	Top Radius	Bottom Radius
	Max.	Min.	Max.	Min.			
1/16	0.0646	0.0642	0.0636	0.0634	0.0054	0.015	0.005
1/8	0.1253	0.1251	0.1261	0.1259	0.116	3/64	1/64
3/16	0.1878	0.1876	0.1886	0.1884	0.178	3/64	1/64
1/4	0.2503	0.2501	0.2511	0.2509	0.237	1/16	1/64
5/16	0.3128	0.3126	0.3136	0.3134	0.298	1/16	1/64
3/8	0.3753	0.3751	0.3761	0.3759	0.359	5/64	1/64
7/16	0.4378	0.4376	0.4386	0.4384	0.417	3/32	1/32
1/2	0.5003	0.5001	0.5011	0.5009	0.480	7/64	1/32
5/8	0.6253	0.6251	0.6261	0.6259	0.605	1/8	1/32
3/4	0.7503	0.7501	0.7511	0.7509	0.725	1/8	1/32
7/8	0.8753	0.8751	0.8761	0.8759	0.850	1/8	1/32
1	1.0003	1.0001	1.0011	1.0009	0.975	1/8	1/32

OTHER CHARACTERISTICS OF UNBRAKO DOWEL PINS

- **Surface Hardness:** Rockwell C Scale: 60-62
- **Surface Finish:** 6 microinch maximum
- **Core Hardness:** Rockwell C Scale: 50-54
- **Case Depth:** .020 inch minimum
- **Average Shear Strength:** 150,000 psi
- **Diameter Tolerance:** ±0.0001 inch

INDUSTRIAL FASTENER Division SPS

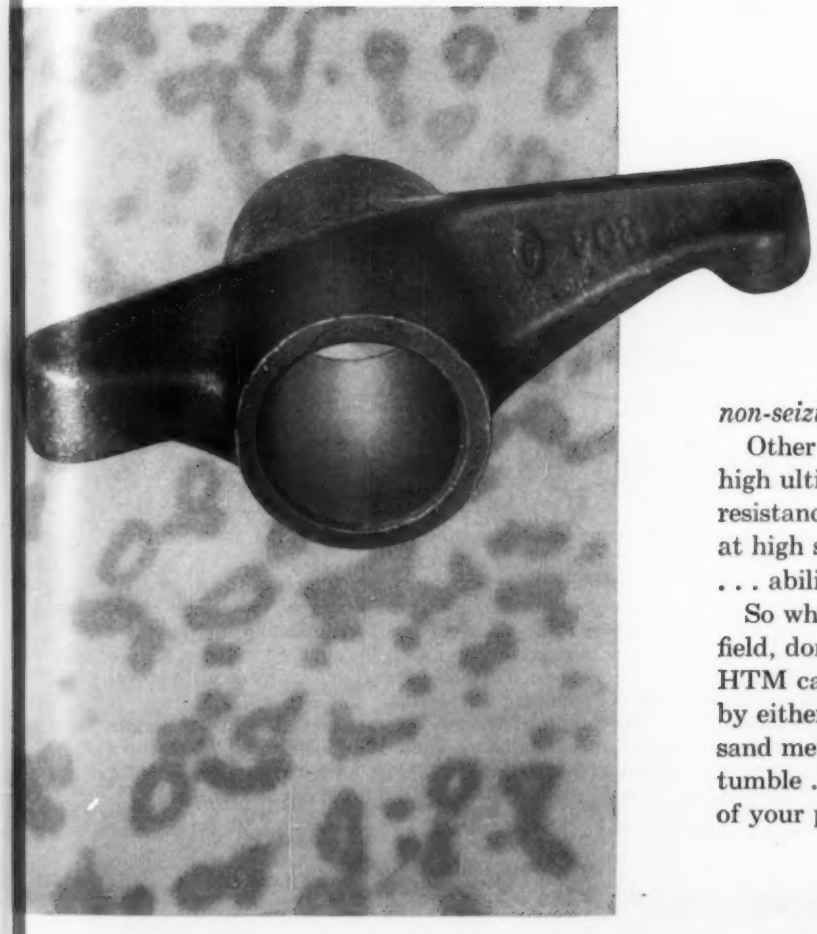
JENKINTOWN 17, PENNSYLVANIA

is your problem

bearing surfaces?

NATIONAL HTM CASTINGS

are the answer



Sleeve bearings and bushings are expensive at best. Often they're unsatisfactory, too. May lead to service and lubrication problems. Frequently you can whip these problems at one fell swoop—by specifying HTM (Pearlitic Malleable) castings because of their *excellent, non-seizing bearing properties.*

Other advantages of HTM castings are high ultimate strength . . . extreme wear resistance under heat and heavy loads at high speeds . . . air or liquid quenching . . . ability to be smooth-finished.

So when you're looking over the materials field, don't overlook the advantages of HTM castings. For HTM metal can be cast by either the shell mold, CO_2, or green sand methods. This means production costs tumble . . . performance and saleability of your product go up.

AA-6981

Important Physical Properties	
Brinell	163 to 302*
Yield, psi	48,000 to 85,000*
Ultimate, psi	70,000 to 110,000*
Elongation, %	7 to 2*

*Depending upon grade

NATIONAL MALLEABLE and STEEL **CASTINGS COMPANY**

Established 1868 *Cleveland 6, Ohio*

MEMBER MALLEABLE CASTINGS COUNCIL

Tubexperience in action

Tubing shaped to New Ideas

Many people think of tubing only in its most common form—round. As design engineers and buyers, you know it can be produced economically in a large variety of unusual shapes. But have you ever seen the particular shapes illustrated on this page? They are samples from production runs formed to extremely close tolerances to satisfy specific design requirements. End uses include Bourdon springs, surgical instruments, batons, aircraft structural parts, gun drill shanks, radar screens, door latches, electrical equipment, antennas, golf club shafts, fishing rods and bushings. However, we don't know where all the different shapes are used, or why they are required. But our ability to form them saves manufacturers in many industries considerable time and money in the fabrication of their products.

Superior regularly produces shaped tubing in many analyses of stainless steel, carbon and alloy steels, nickel and nickel alloys, and glass sealing alloys. Also in titanium and beryllium copper. Shaped tubing is generally supplied in the as-formed temper (annealed before shaping), but many special tempers can be supplied.

We can probably supply your requirements at low cost, in good time. Data Memorandum No. 17 gives full details about Superior Shaped Tubing. Write for a copy today. Superior Tube Company, 2004 Germantown Ave., Norristown, Pa.

Superior Tube

The big name in small tubing

NORRISTOWN, PA.

All analyses .010 in. to 5/8 in. OD—certain analyses in light walls up to 2½ in. OD

West Coast: Pacific Tube Company, Los Angeles, California • FIRST STEEL TUBE MILL IN THE WEST

Cold rolled anneal and pickle line at Jones & Laughlin Steel Corporation's Louisville, Ohio plant

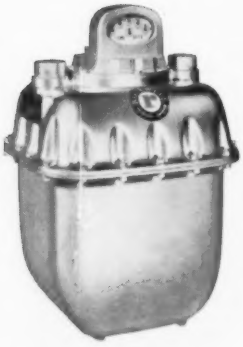
Wean, J&L and Stainless . . .

Eleven continuous processing lines at Jones & Laughlin's impressive new stainless plant—*all designed and built by Wean Engineering*—demonstrate the versatility of Wean's abilities in this field. From conditioning of incoming coil, through annealing, pickling and surface treatment, to slitting and cut-up, these Wean lines assure Jones & Laughlin customers top quality stainless strip or sheet to meet the most exacting requirements.

In the design of this equipment, high quality surface finish of the stainless was a prime requisite—one of the reasons Wean was selected to engineer and build this multi-line installation. Whatever *your* requirements in continuous strip processing, you can benefit from Wean's *creative engineering.*

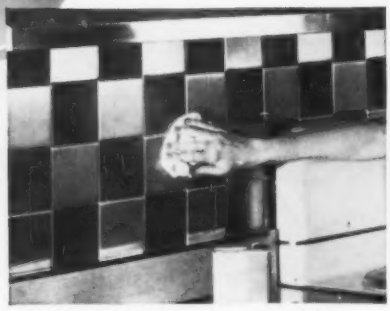
THE WEAN ENGINEERING COMPANY, INC. • WARREN • OHIO

If you buy aluminum for your product...



Gas meters

Boats and outboard motors



Tile

and you like service, check with ANACONDA ALUMINUM

How can an aluminum supplier best satisfy your needs?

By precisely meeting your product specifications? By offering a wide enough product range to fill your needs? By shipping your order on time?

If these are your concepts of real customer service, then check with Anaconda Aluminum because they're ours, too.

It starts with prompt scheduling of your order—made possible by the flexibility designed into Anaconda Aluminum's modern facilities. Skilled aluminum craftsmen constantly check to make sure your aluminum matches your specifications—and that it's shipped on time.

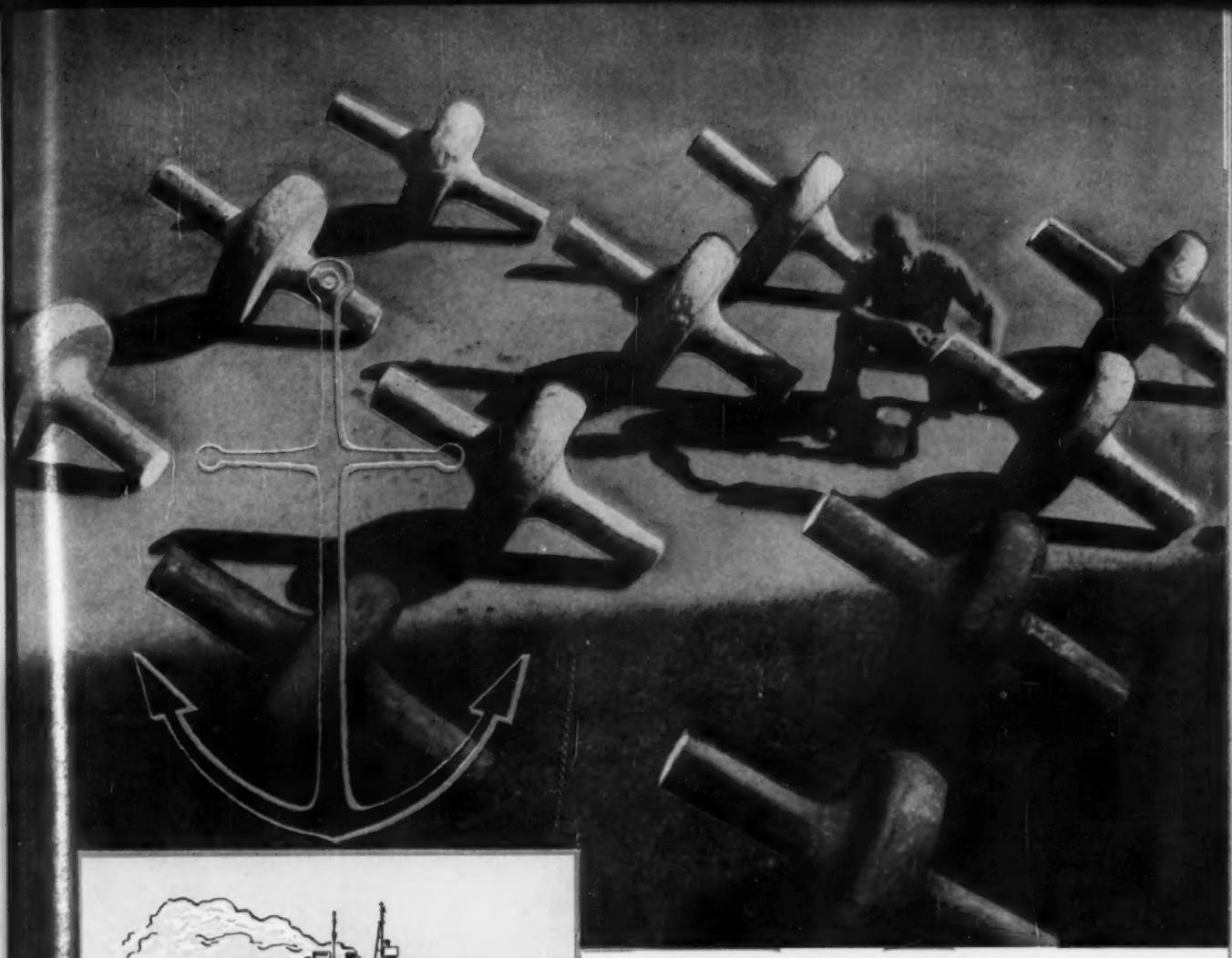
Anaconda Aluminum combines these custom production methods with facilities large enough to fill a wide range of needs—pig and ingot, coiled and flat sheet, rod, bar, structurals, tubing and other extruded shapes.

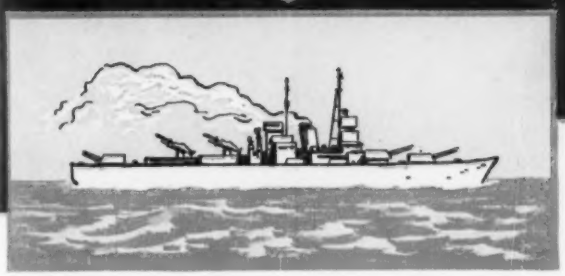
If you like this brand of service, call your local Anaconda Aluminum representative, or write our General Offices, Dept. IA-8, Louisville 1, Kentucky.

Every industry has one member who specializes in customer satisfaction

ANACONDA ALUMINUM

ANACONDA ALUMINUM COMPANY • GENERAL OFFICES, LOUISVILLE, KENTUCKY





Marine Auxiliary Turbine Rotors. Weight Rough Forged—1000 pounds. Diameter of Wheel—20 inches. Diameter of integral forged shaft arm—5 inches. Shaft arm length end to end—5 feet.

Forged Alloy Steel Rotors Sail the Seven Seas . . .

These forged alloy steel rotors will show up at the heart of auxiliary turbines driving boiler feed pumps on large maritime and naval vessels. Rough machined, they weigh slightly less than 1000 pounds each.

Here is visual proof of the versatility of our steel forging production capabilities . . . versatility enabling us to meet the specifications for components required by a wide diversity of industrial and marine machinery.

The same careful quality control procedures as are accorded to turbine rotors weighing 40 tons and more, are standards of operation in producing these relatively small components.

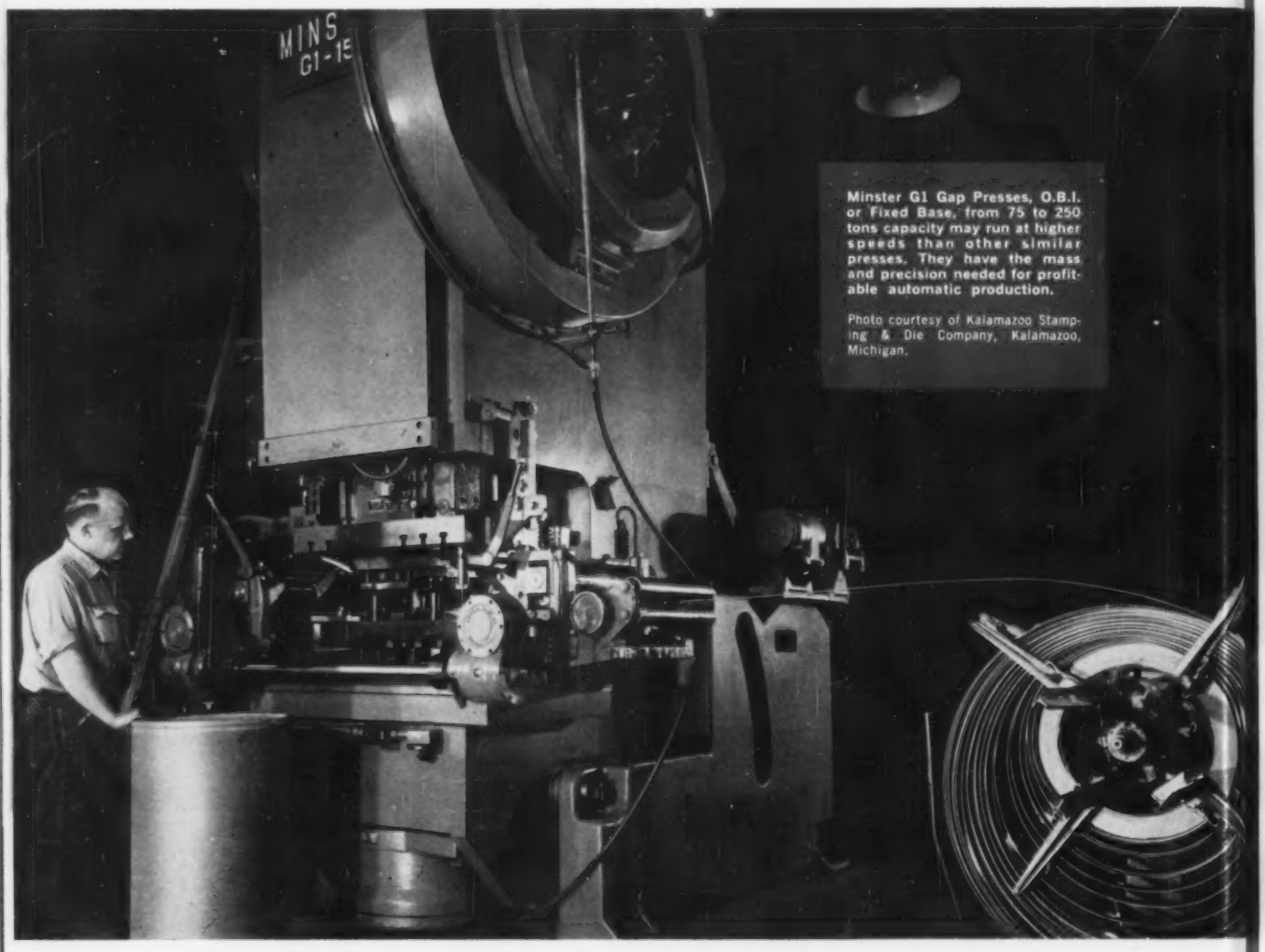
You are safe in placing your parts forgings in our hands. It will pay you well to consult with us on your requirements for any size or shape of steel forgings and castings.

ERIE FORGE & STEEL CORPORATION

ERIE, PENNSYLVANIA

Eliminate expensive secondary press operations with

AUTOMATIC PRODUCTION



Minster G1 Gap Presses, O.B.I. or Fixed Base, from 75 to 250 tons capacity may run at higher speeds than other similar presses. They have the mass and precision needed for profitable automatic production.

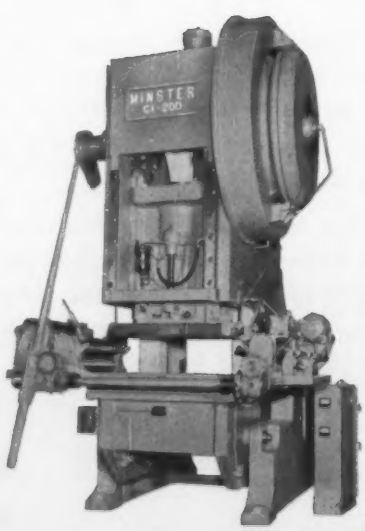
Photo courtesy of Kalamazoo Stamping & Die Company, Kalamazoo, Michigan.

Minster Heavy Capacity Gap Presses with Feeds

Progressive or compound die stamping jobs . . . long or short runs . . . are much more profitable when run automatically on the right Minster press with job-matched feed equipment.

Why pay for unnecessary rehandling of parts and storage space? Why tie up several presses when the job can be done faster and more accurately on just one press?

Minster offers a full range of presses and feeds plus technical knowledge and assistance to help you take full advantage of automatic production. Take a close look at your unit costs, then write or call . . .



The Minster Machine Company • Minster, Ohio

MINSTER®

You get steel + plus from U. S. Steel

"I sold them a steel that cost more, so they could pay less,"
SAYS TOM HALLORAN, USS SALES REPRESENTATIVE, PITTSBURGH
"One of my customers, Elliott Company, made some of their turbine discs from a special alloy steel that had to be forged, cross-rolled, heat-treated and torch-cut to size *before* machining.
ROLL IT...
...AND PAT IT...
...AND MARK IT WITH "E"...
SEEMS TO ME THERE'S AN AWFUL LOT OF ACTIVITY AROUND HERE
"I visited the plant with a USS metallurgist who joined a team of Elliott engineers to study their operation. They found they could use USS "T-1" Steel, which is furnished to meet 100,000 PSI minimum yield strength in plate thicknesses up to 2½" inclusive. This eliminated *all* the pre-machining operations.
...AND PUT IT IN THE OVEN FOR ELLIOTT AND ME
USS and "T-1" are registered trademarks
"Elliott adopted "T-1" and, even though it cost a little more than the previous steel, it cut material costs 60%, because it saved work.
WHAT'S THIS... LUNCH HOUR, COFFEE BREAK OR A SIESTA?
NOPE... M' REGULAR SHIFT... WE GOT A NEW SYSTEM AROUND HERE
"Technical assistance in the selection and most economical uses of steel is only *one* of the U.S. Steel plus services."
When you buy from U. S. Steel you get steel plus technical assistance . . . research . . . facilities . . . marketing assistance
United States Steel Corporation—Pittsburgh
American Steel & Wire—Cleveland
National Tube—Pittsburgh
Columbia-Geneva Steel—San Francisco
Tennessee Coal & Iron—Fairfield, Alabama
United States Steel Supply—Steel Service Centers
United States Steel Export Company
USS
United States Steel

SHORT TOOL LIFE due to chip weld, cratering and burning, in many cases, has been traced directly to lube oil dilution of cutting oil effectiveness. Cleartex can end this problem forever.

Diluted cutting oil shortens tool life drastically

Lubricating oil is probably leaking into the cutting oil sumps of your automatic screw machines as you read this. Current research proves that this is happening in 70% of all the automatics in use today! And where it happens, it shortens tool life by as much as 50%—even 70%. On top of this, the cost of extra regrinds, lost production during tool changes, and excessive scrap production is putting a premium on screw machine operation in too many shops.

Look for these symptoms. One sure sign of dilution is the need for frequent refilling of the lube oil sump. If you are using an ordinary lube oil, this dilution will create two additional—and more costly—symptoms: excessive scrap production and frequent regrinds. Now you can eliminate these forever with the

TEXACO CLEARTEX CURE

The exceptional chemical stability and load-carrying ability of Texaco's Cleartex series make them equally suitable for use as cutting oils, lubricants or hydraulic fluids. All you have to do is use them for both cutting *and* lubrication. With Cleartex in *all* your sumps, you'll find cutting oil dilution will stop and screw machine production cost will drop substantially.

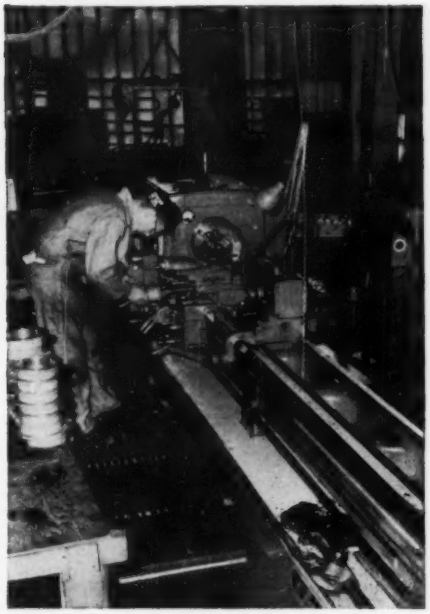
Write today for your copy of Texaco's helpful new booklet "Cleartex in Automatic Screw Machines"...and contact your local Texaco Lubrication Engineer for an authoritative survey of your automatics. Just call the nearest of the more than 2,000 Texaco Distributing Plants, or write Texaco Inc., 135 East 42nd Street, New York 17, N. Y., Dept. IA-FM-22.

Constant Progress in Oil's First Century

LUBRICATION IS A MAJOR FACTOR IN COST CONTROL

(PARTS, INVENTORY, PRODUCTION, DOWNTIME, MAINTENANCE)

Here, a slip joint collar is being turned and bored from a T-6 aluminum blank. Floor-to-floor time is only 25 minutes, a 30% saving in time alone.



even an engine lathe can have an impressive record of savings if it's a LODGE & SHIPLEY POWERTURN

records show $2000.00 annual saving . . .
30% on a typical operation

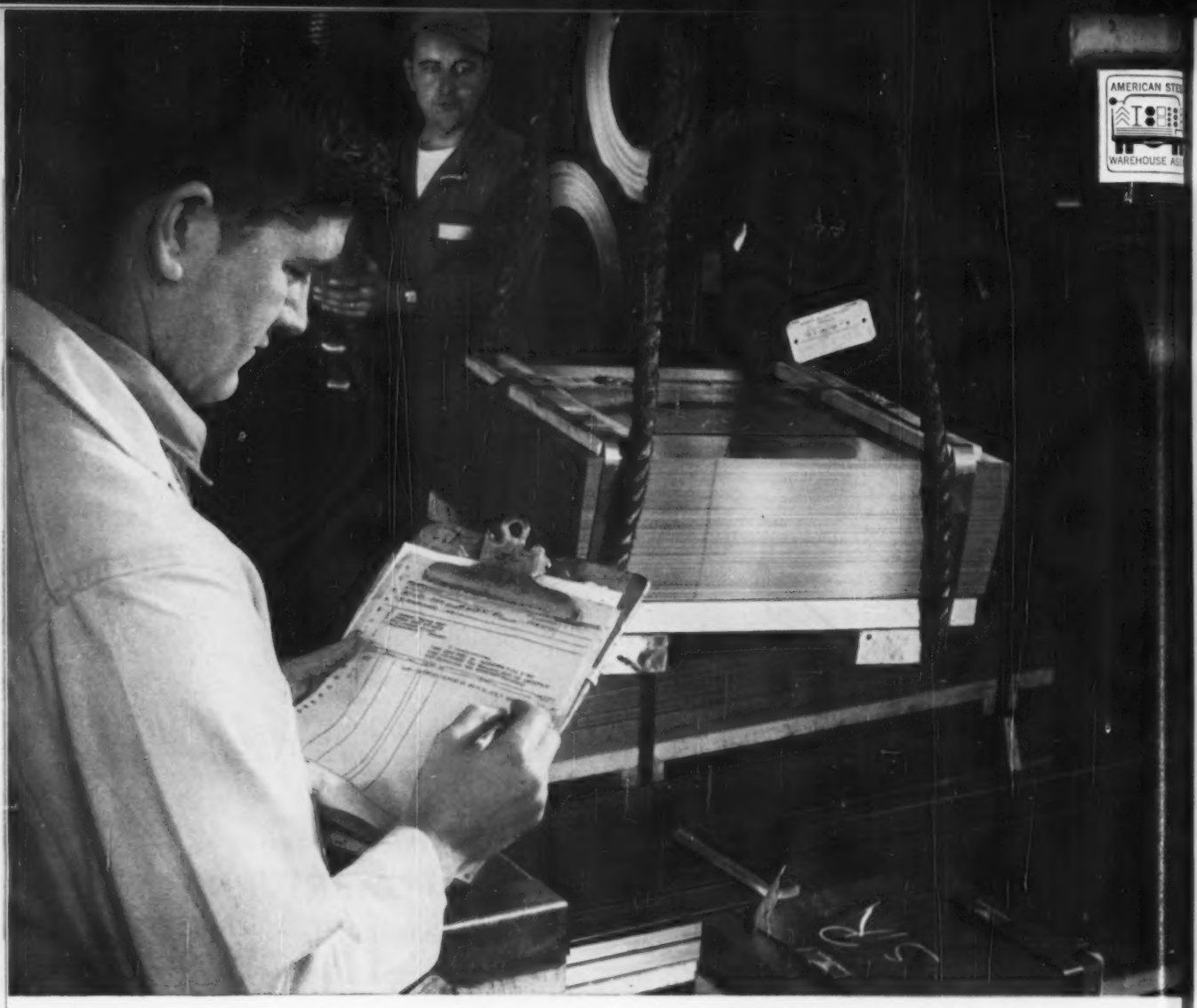
Significant savings are nothing new on production type lathes but it is something to write home about on an engine lathe. Tacoma Boatbuilding Co., Inc., Tacoma, Washington, liked the accuracy, versatility and output of their POWERTURN Lathe . . . found impressive savings even when this engine lathe was used for non-repetitive operations.

Whatever your turning requirements, consider Lodge & Shipley. Your needs can be filled precisely from a complete range of sizes and types . . . Production, Engine, Toolmaker, Gap, Hydraulic Tracer Controlled and Right Angle Chucking Lathes . . . all designed to provide the best machine for a specific job.

Check Sweet's Machine Tool File, your telephone book Yellow Pages or write direct for literature: **The Lodge & Shipley Company, 3073 Colerain Ave., Cincinnati 25, Ohio.**

Your Lodge-ical choice . . .

Lodge & Shipley



Typical J & L Steel Service Center scene showing how sheet metal is banded, sealed and handled to prevent damage.

Extra Care at "The Department Store of Steel" prevents damage...saves you time and money

● Any way you look at it, it takes your time and costs you money when you receive damaged steel that delays your production. To prevent such a situation, your J & L Department Store of Steel makes *extra care* a standard practice in processing every order.

On orders for sheared sheets, for example, J & L warehousemen handle sheets with sheet lifters instead of hooks, shear squarely and accurately, package tightly with bands and seals instead of wire, protect corners and edges, and tag each unit securely with complete data for your ease of identification.

Extra care is practiced in all departments by all personnel in the handling of every order—at no extra cost to you. Call your J & L Steel Service Center for your next steel requirement and see how *extra care* can save you time and money.

J & L Steel Warehouse Division

DIVISION OFFICES · INDIANAPOLIS, INDIANA

CHICAGO · CINCINNATI · CLEVELAND · DETROIT
HAMMOND · INDIANAPOLIS · LANCASTER · LOUISVILLE · MEMPHIS
NASHVILLE · NEW ORLEANS · NEW YORK · PITTSBURGH

J&L
The Department Store of Steel

FIRST PREDICTIONS FOR 1960 AUTO SALES are coming out of Detroit from new model previews. Cadillac and Oldsmobile general managers believe new car sales will reach 6.9 million next year. This is a gain of about 10 pct over this year.

A BIG SURPRISE ON FOREIGN CAR predictions was dropped by J. M. Roche, head of Cadillac. He forecasts a decline in imports next year, reversing the trend that has been apparent since U. S. car owners discovered the small car. Basis for this prediction: The automakers' confidence that new "light" cars will eat heavily into the market for imports.

PLANS TO CUT INTO THE STRATEGIC STOCKPILE are in the making. The $8.1 billion stockpile is considered too high and changing defense concepts have made once-strategic materials strategic no longer. But a delaying action is anticipated to prevent serious upsetting of any of the markets for stockpiled materials.

CLUE TO MILITARY PLANS FOR SAVING MONEY is seen in the B-58 cutback. The Air Force will buy only 32 of the bombers in this fiscal year, instead of the original 40. Savings of $200 million are in line with the Defense Dept.'s aim to hold its budget and spending to not more than $41 billion a year.

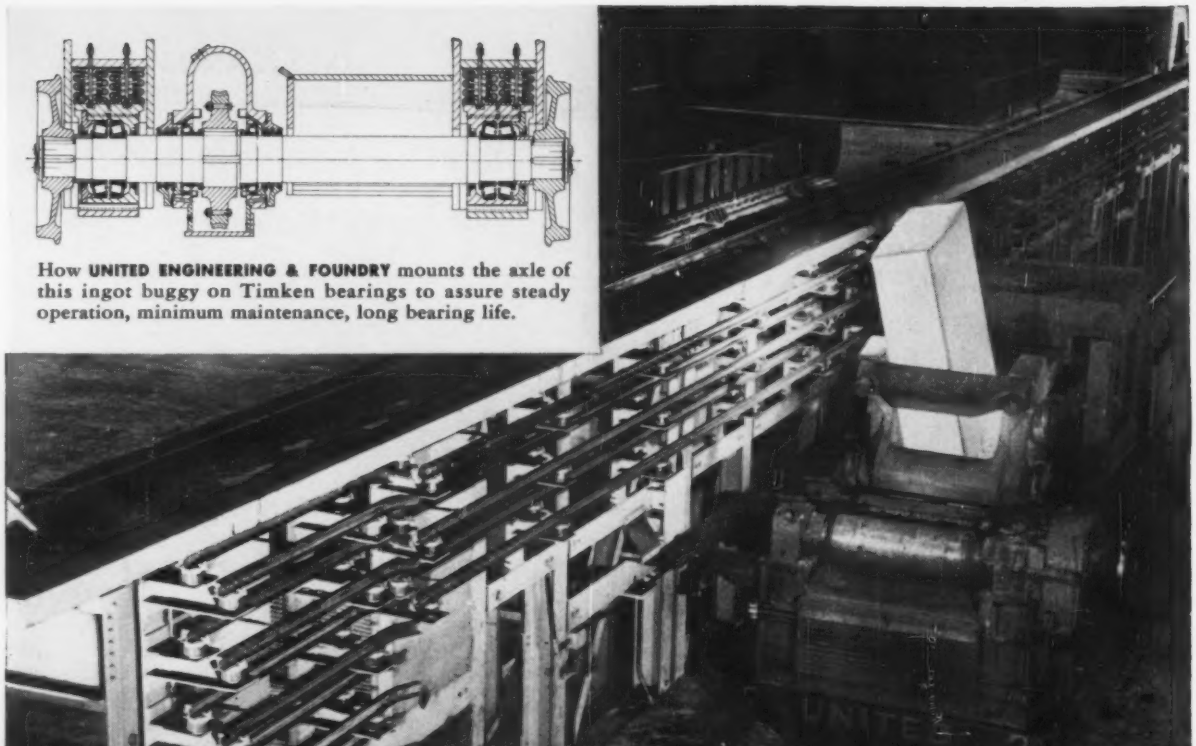
THE OUTLOOK FOR MACHINERY AND MACHINE TOOLS is looking better every week. The Value Line investment survey reports that prospects for continued improvement in incoming business are particularly favorable for machine tool builders. Auto companies are expected to be big spenders.

INDEPENDENT STAMPERS ARE ENJOYING THEIR best business in perhaps two years. Incoming orders and production are reported strongest in the Midwest. One hitch: Stampers may be among the first to be hit by critical steel shortages. Many will find big orders on their books, but not enough steel to fill them.

STEEL STRIKE EFFECTS AND SEASONAL factors combined to cut into spendable earnings in July. The average factory worker, with three dependents, took home $80.85 per week during the month. This is down about 85¢ from the previous month, but still about 7 pct better than a year ago.

THE JULY FIGURES ON EARNINGS reflected only the initial effects of the steel strike's first two weeks. Labor Secretary James P. Mitchell estimates that 625,000 workers are now idled.

How **UNITED ENGINEERING & FOUNDRY** mounts the axle of this ingot buggy on Timken bearings to assure steady operation, minimum maintenance, long bearing life.



Keeps hot slabs moving fast with 27 Timken® bearings to keep it rolling

THIS United ingot buggy moves hot slabs and keeps 'em moving fast from a major steel producer's slab mill. To make sure the buggy moves the heavy loads steadily, with minimum maintenance, its builders, United Engineering & Foundry, equipped it with 27 Timken® *tapered* roller bearings. They're used on the axle drive worm shaft, axle journals, worm gear tilting drive worm shaft and tilting drive pinion shaft because Timken bearings:

1) *Keep shafts aligned, gears meshing accurately.* The tapered design of Timken bearings enables them to take any combination of radial and thrust loads. And full-line contact between rollers and races provides maximum stability. Cost-saving results are: shafts are held rigid; gears mesh smoothly and accurately; shaft wear is eliminated; gear wear reduced.

2) *Assure longer bearing life.* Timken bearing rollers and races are case-carburized to have hard, wear-resistant surfaces over tough, shock-resistant cores. They practically eliminate friction, roll smoother, longer.

Any machine with Timken bearings gives you *extra* benefits—the benefits of Timken Company leadership in tapered roller bearing design and in engineering service. It's leadership backed by the most modern research and development facilities in the bearing industry. To get the most out of the machines you build or buy, specify Timken bearings. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable: "TIMROSCO". *Makers of Tapered Roller Bearings, Fine Alloy Steels and Removable Rock Bits.*

WHEN YOU BUY TIMKEN® BEARINGS YOU GET...

1. Quality you can take for granted
2. Service you can't get anywhere else
3. The best-known name in bearings
4. Pace setter in lower bearing costs

BETTER-NESS rolls on

TIMKEN®

First in bearings for 60 years

tapered roller bearings

OCDM Seeks Long-Range Cure For Stockpile Headache

Some 38 million tons of stockpiled materials now cover nearly 2000 acres of storage area.

Changes in technology and military planning have created a need for a new approach to stockpiling.—By N. R. Regeimbal.

▪ Government stockpile managers are going to move slowly in trying to answer the question of what to do with their $8.1 billion hoard, half of which is no longer needed under present planning.

They're now working toward a two-headed solution which will take a year or more to turn into a new stockpile management policy. In the meantime, the delay will take lots of pressure off of jittery mineral and metal markets—and off the officials.

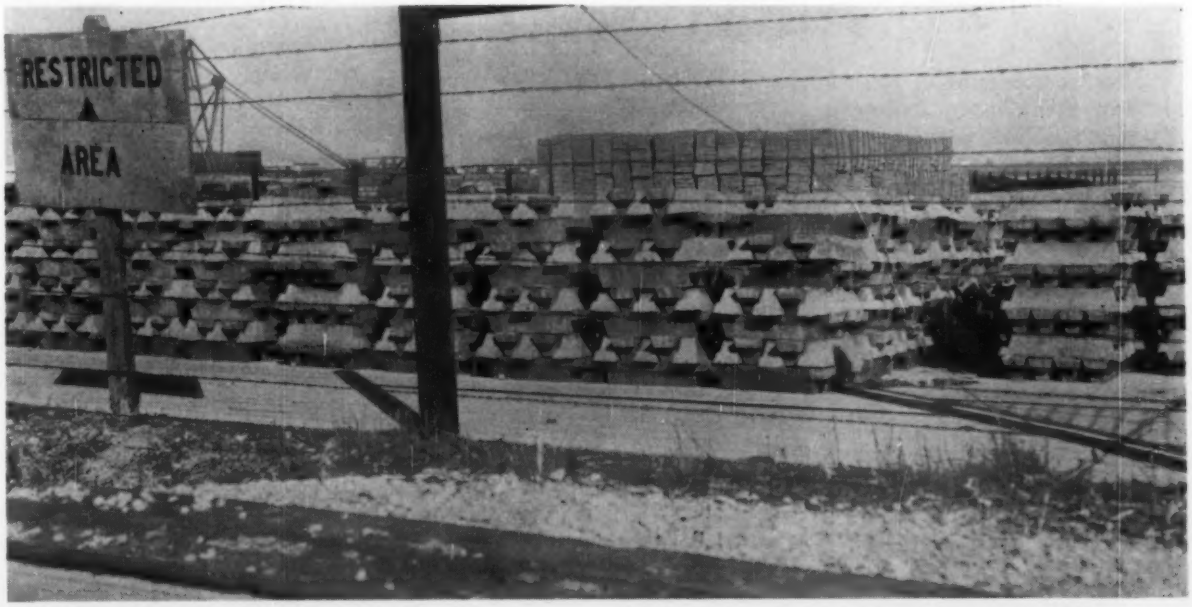
Stockpile Reduction—The plan: Justify retention of more of the items already stockpiled to reduce the $4 billion excess to $2 billion or less; get from Congress more flexibility in disposing of the remainder of the excess.

As a first step, officials of the Office of Civil and Defense Mobilization have drafted revisions in laws governing disposal of stockpile items. These are now circulating through other government agencies and unofficially among some key congressmen.

Present laws require specific congressional approval for sale of excess stockpile materials. A six-month waiting period is required after informing the lawmakers even when an entire obsolete category is to be sold off. Under the new plan, OCDM would give only 90-day notice of any stockpile disposal, and Congress would have to actively veto the sale to block it. This change will have to be approved by Congress, and it won't come easily.

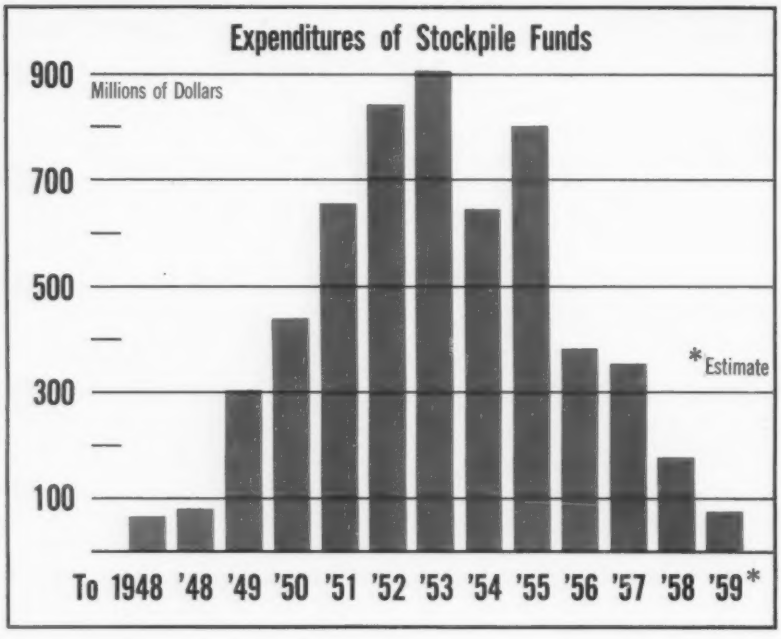
In addition, OCDM Director Leo Hoegh has set up a new study

How Big a Problem Is the U. S. Stockpile?



It cost $8.1 billion to build to present size.
It contains 38 million tons of materials.
Its recoverable value is only about $7.1 billion.
It's $4 billion above foreseeable needs for defense.
It's stored in 600 acres of warehouses.
And in 1300 acres of open storage space, above.

History of Stockpile Spending



of stockpile policy. This will take about a year to complete.

Most of the $4 billion stockpile excess was created when the Pentagon a year ago switched from planning for a five-year war to a three-year war. The stockpile materials were designed to provide raw materials for industrial production and recovery.

Calls For Reappraising — Now, Mr. Hoegh indicates he wants to broaden this stockpile planning. The new study will determine how much of which stockpiled materials would be needed for post-attack recovery of the entire economy. And, for the first time, he wants stockpile policy (with the help of electronic computors) to consider which of the present mounds, bales, stacks, and warehouses of stockpile materials would themselves be knocked out in a nuclear attack.

Outcome of this study may be not only a reduction in the stockpile surplus to be disposed of, but some new or refined stockpile goals too. "Rapidly changing technology may result in new requirements for high-temperature alloys and other special-purpose materials," he says.

"It may be necessary to make allowance in the (stockpile) objectives to meet new demands for these purposes."

The new management plan would help ease the market pressure disposal would create, the managers say. It would permit them to move more swiftly when the market for a particular commodity is "right."

Millions of Tons—New figures show how serious this stockpile question now is. The government now hoards in 600 acres of warehouses and 1300 acres of open storage some 38 million short tons of goods for which it originally paid $8.1 billion. There are 75 different categories of commodities.

But these materials would bring only $7.1 billion at most even if carefully fed into industrial markets over a long period of time. Some one billion dollars worth can't be sold at all under present laws. Storage of the mountains of materials alone costs $14 million a year, and have cost $260 million since the program began.

The list of materials in which the stockpile is now full and overflowing is long. It includes aluminum, copper, abrasives, asbestos, refractory-grade bauxite, beryl, cadmium, chromite, columbite, diamonds, fluorspar, graphite, lead, magnesium, manganese, mercury, molybdenum, nickel, platinum, tantalite, tin, tungsten, and vanadium.

Not all of the present surpluses in the stockpile result from the new short-war planning policy. In many cases, changed technology has removed the need for a commodity, in other cases, new sources of supply have made it unnecessary for the government to stockpile an item.

In discussing the new stockpile study before Congress, the OCDM director also hints that the present policy of stockpiling only industrial raw materials may be changed. One result of the study may be that some finished or semi-finished items will be stored in place of some raw materials to speed-up recovery of industrial plants and the civilian economy.

Revise Materials Stored — Informed guesses say these might include some construction items (perhaps some aluminum and steel) as well as medical supplies, tools, and other goods.

Such a program, however, would be hard to sell to Congress, officials admit.

In addition, there are indications that the new head of the stockpiling policy agency may favor a return to the so-called one-year rule. This rule, dropped when the three-year war plan was adopted, required that in no case was a stockpile objective to be less than one year's normal U. S. consumption.

There are only five items for which the Government has not filled its "basic" stockpile goal — enough to meet a limited war or nuclear attack. Improvements in supplies or reductions in requirements of two of them mean that the Government is now "short" only three—amosite asbestos, diamond dies, and jewel bearings.

Steel Supplies Worry Stampers

Low Inventories May Bring Production Cutbacks

Job stamping shops bypassed their normal seasonal slump and are having an unusually busy summer.

But with steel supplies dwindling, production cutbacks are coming.—By K. W. Bennett.

■ Job stamping shops bypassed their usual summer seasonal lull. Instead they went from a busy June into a busier July and August.

As a result, the unprecedented business upswing is draining the steel stocks of the stampers. Most of them are still operating at strong levels. But the first production cutbacks may be only a week away. And, if the strike continues, the entire stamping industry could be clamped in an acute supply shortage by mid-September.

Faster Pace—Right now stampers report business running from 25 pct to 35 pct over June's high levels. Normally, stamping business drops 10-20 pct during the seasonal July-August lull. This year July orders exceeded the June level. August is topping July.

Steel buyers for the stamping industry had counted heavily on a summer slump to stretch their stocks.

Estimate Conservative — The Pressed Metal Institute estimated earlier this year the average monthly output of metal stampings would exceed the 1958 monthly average by 17 pct. The new July-August sales reports suggest this figure could rise to 25 pct. But that's only if the steel strike is settled in time to allow stampers to book new orders after September 15.

The July-August business upswing is draining inventories at unexpected speed, but stampers had put in enough inventory to withstand substantial demand. One shop that normally buys 75 pct of its steel from mills and 25 pct from steel service centers, reports it is able to pull 50 pct of current production needs from its inventories and pick up the other 50 pct from steel service centers. The shop reports mill suppliers were delinquent on 200 tons of sheet when the strike cut off shipments. This represents about 1¼ months production. This stamper will be able to produce stampings for about two weeks.

Strong Now, But — Another stamper, normally buying 50 pct of his steel from mills and 50 pct from steel service centers, reports he is meeting 50 pct of current production needs from inventory. He'll last until the third week in September, but is expecting a complete shutdown then. His major customer will shut down at the same time.

A large stamping shop, usually buying 90 pct of its requirements in steel mill quantities, is meeting 80-90 pct of current requirements from inventory. July business levels rose 15 pct over June. August is 35-40 pct over June. This shop's steel stocks will be at the exhaustion point in three weeks time.

Search and Substitute—One Midwestern stamper obtained a customer's okay to switch one product from 16 gage sheet to 14 gage. Substitutions of 19 gage sheet for 18 gage are reported in a number of instances. Another shop turned down a job this week because its warehouse supplier cannot supply the steel required for the stamping. A third has given up in a search for 22 gage aluminum killed sheet. And a fourth reports it is in difficulty on cold-rolled 22 gage sheet.

More Worries Ahead — Some stampers believe they can hold out until late September or even October. These represent a small minority. The very rapid drop in service center sheet stocks is another cause for alarm. Brokers are offering sheet, but at stiff and rising prices.

Another problem for the stampers: The strike will not solve their steel problems immediately. Most believe mills will require at least a month to get up to adequate delivery levels. A large number of stampers are already facing the point at which a month's delay of any item would force them to operate at reduced levels.

Stampers Defy Summer Slump

Stamping Production Index

	1958	1959
January	131	144
February	128	153
March	132	162
April	130	173
May	121	182
June	120	192
July	113	200
August	134	210
September	134	
October	141	
November	127	
December	127	

May, June, July, August are IRON AGE estimates based on individual reports.

Source: Pressed Metal Institute.

Non-Intervention Pressure Grows

Mitchell study is another push toward a compromise way out of the steel strike.

But both sides claim it vindicates their own stand on the issues.—By G. H. Baker.

■ Secretary of Labor James P. Mitchell's attempt to "get the facts before the American people," is only the latest step in the Administration's non-intervention pressure.

The report relates only to the economic questions around the steel strike. Nothing is said about the points of past working practices and other non-economical issues that may be as critical as wages and profits.

The fact that both sides claimed at once the study vindicated their positions, points out the wide gulf that still separates them on the economic issues alone.

Deeper and Deeper—But at this point, at least, the Government is confining its pressure to charts and statistics like chart, below.

What the Mitchell charts and comments add up to is this:

By degrees, Washington is insinuating itself deeper into the strike negotiations. The Administration has been inching its chair up to the negotiating table little by little.

If the strike continues and the Administration continues to issue what it calls "background facts," on the strike, it won't be long before it has both elbows on the negotiating table and is pushing settlement terms upon the parties.

Room for Compromise?—When Mr. Mitchell referred to "an area of settlement," in the economic facts, he implied that there is room for compromise — that compromise, in fact, is only a reasonable request.

But, until the latest hints (see opposite page), there had been no indication that either side believes a compromise is imminent. The steel companies have not weakened from determination to reach a non-inflationary solution.

Mr. Mitchell and other members of the Administration team deny they are taking any active part in suggesting terms of settlement to either side. On the surface, this is true.

Now Back in 1956—But no accounting has ever been made of the behind-the-scenes pressure that the Administration applied in ending the 1956 strike. Mr. Mitchell at his press conference last week said: "In 1956 I simply brought the parties together. There was no interference, and neither is there any interference this time."

Today, the steel industry faces the same issue, that the government will bring its weight to bear for a compromise.

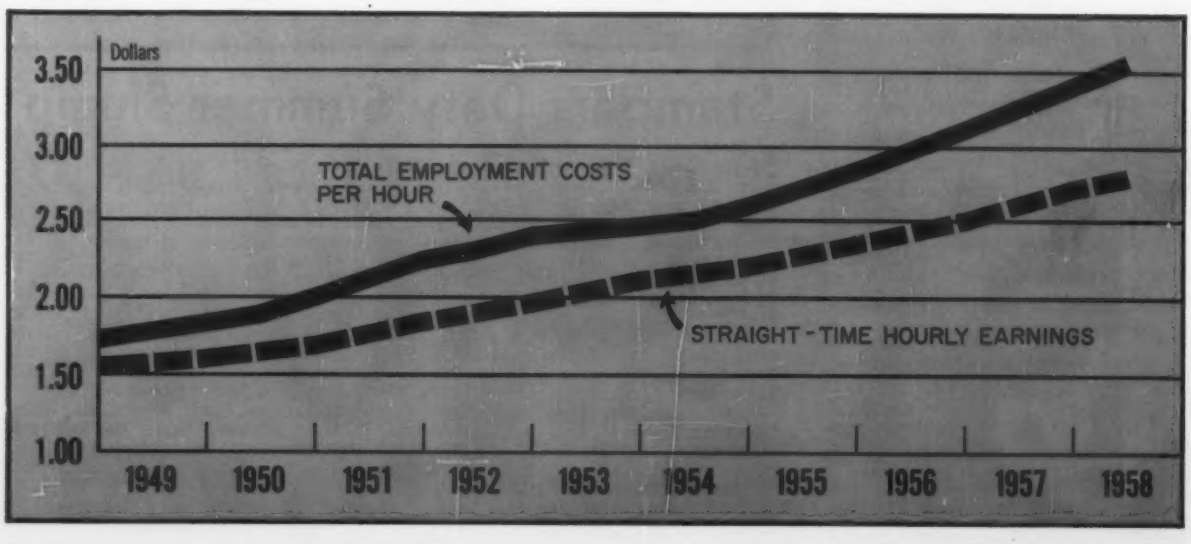
It seems clear that Mr. Mitchell has decided privately to "go easy" as long as steel buyers continue to live comfortably off their inventories. And it is also clear that he has decided to start applying high pressure at the negotiating table by the third week of September, if the strike is still on at the time.

Study Conclusion — These are some of the conclusions reached in the Mitchell study:

Total steel employment has risen only slightly in postwar years. While the number of production workers has fluctuated considerably, the number of administrative, professional and clerical workers has risen considerably.

Gross hourly earnings in steel

Steel Wages, Fringes Rank With the Best



rose by $1.43, or 85 pct, from January, 1950, to May, 1959. In the same period, steel wages as a whole rose by greater percentages and by greater absolute amounts than wages in most of the economy.

Many Skilled — Basic steel employs a relatively large proportion of workers in skilled occupations. Measured in terms of average hourly earnings, steel wages are higher than in most other industries. The May, 1959, average of $3.10 in steel compares with $2.23 in all manufacturing, and $2.68 in automobiles. Wage rates, job for job, compare closely with oil refining and auto production.

Both in absolute amount and as a proportion of total employment, expenditures for fringe benefits in steel have grown substantially.

Fringes Come High — In 1940, the cost of fringe benefits in steel totalled 7¢ per hour, or 8 pct of straight-time hourly earnings for wage employees. In 1957, they totaled 63¢ per hour, or 25 pct of straight-time hourly earnings.

Fringes include premium pay for overtime and shift differentials, paid vacations, paid holidays, jury duty pay, severance pay, supplemental unemployment benefits, and employer contributions to insurance, pensions, and required payments.

Reaction — R. Conrad Cooper, chief negotiator for the steel companies, made this statement:

"It shows that: . . . rapid increases in steel wages have put the steelworker at the top of the list . . . Increases in employment cost have been far in excess of increases in output per man-hour . . . The rate of increase in output per man-hour in steel has been lower than either the national economy as a whole or in manufacturing industries generally . . ."

David M. McDonald, Steelworkers' president, pointed to the fewer employees and fewer hours of work required for each ton of steel, increases in output per man-hour, wage increases compared with price increases.

Contract Language Revised

For the first time, both sides are seriously talking contract language.

It can be a starting point for negotiation on economic points.—By Tom Campbell.

▪ The second string of union negotiators and the first string of steel industry negotiators were close this week to a complete revision of contract language. That does not mean any settlement is near. But it does mean that in a week or so the summit meeting of top negotiators from both sides will have a contract to look at—but not with the final price tag on it.

For some time, steel firms have been pushing for an agreement which would insure union cooperation with management attempts to get more economical and efficient operations in the mills. In return for this, the steel side has been willing to talk turkey on some kind of a wage-fringe package.

Something to Work On — There have been a lot of road blocks. There still may be a lot more. But before Labor Day, steelworker president David McDonald and steel management negotiator, R. Conrad Cooper will have something definite with which to bargain.

Up to last week, the steel side had placed no dollar sign on tentative language changes. The union price may be too high for steel management. And, again, the steel price offer may be too low for the union.

The effect of Secretary Mitchell's report was about nil in steel, union and public circles. But this non-intervention pressure is a sample of what is coming from the White House until a steel settlement is reached. As mid-September draws near, there is more reason to believe White House pressure will become more intense. Whether or not it will lead to an agreement without a Taft-Hartley 80-day cooling off remains to be seen.

Neither the union nor the steel firms want a Taft-Hartley injunction. Nor does the Administration.

When the coming summit meetings between union and steel negotiators start trying to put a mutually acceptable price on their contract revisions, the real test of negotiations will come. It may be that the obstacles will be so tough that bitterness and stalemates will break out anew.

Trouble to Come — On the economic front, a non-inflationary package must be worked out. This also means there will be a real hassle on the cost-of-living clause, which the union wants and which most of the 12 steel firms are dead set against. When that is settled, there comes the question of "how much" of a wage-fringe increase.

David McDonald is on record for a 15¢ an hour package but which steelmen say is closer to 20-22¢ an hour. But he can come down—and probably will have to if there is to be a settlement. The steel industry has yet to make a cents-per-hour offer. But once it sets its own price on the contract as revised by the working teams, it will have a good idea of what can be done.

There has been bargaining by getting contract language ready first and arguing economic factors next. This is a reversal of all past practices. That's why it is so difficult to forecast the outcome. And that's why there are few grounds for optimium.

Air Cargo Grows at Jet Speed

A record year seems certain for the air freight business, and it could be just the beginning.

Airlines believe that jet cargo transports will cut ton-mile costs to equal trucking rates by 1965. —By T. M. Rohan.

▪ The air freight business — now well on its way to the biggest year in its history—is speeding toward far wider horizons with the coming of jet planes. For marketing, distribution and traffic men in metalworking, the impact of the jet plane will be far reaching.

The tremendous lifting capacity of the jets will have as great an impact on cargo as it already has on passenger planes. The arithmetic indicates substantial rate cuts will be possible—maybe a halving by 1965. Rates now are about 21 cents per ton mi. and trucks about 15 cents.

Washington Approves—Government policy is also favoring build-up of an air cargo fleet as a defense standby. A recent report to Pres. Eisenhower favored it. Some military cargo has already been diverted.

The 3 year old $5.5 million New York Air Cargo center is handling 7000 tons of air freight monthly, about a 50 pct increase since it started. In Newark, N. J., another $4 million center is going up.

"The air cargo side of a transportation revolution is developing dramatically," said Stuart G. Tipton, president of the Air Transport Association of America on a recent Cleveland visit.

Cut-Rate Speed — "With the speed and lift of the jets, some better ground handling methods, containerization and sufficient volume, we hope to get rates down to about 15 cents a ton mile in the next 5 years. The Super Hercules now on order is already pointing for 18 cents," he says.

"Our air cargo volume this year should easily hit 600 million ton miles, the highest in history," says Mr. Tipton. The industry is up about 21 pct in the first 5 mos. of this year compared to the same period last year.

"Our biggest problem these days is getting the air freight story to the proper man in a company. Traffic agents' budgets are set up for paying the traffic rate only. We must get to the man with the big picture who can compute the savings in lighter packaging, less insurance, less breakage, lower pilferage and faster payment for goods received."

Outlook Good — "The outlook for air cargo, both immediately and long range, is very good, particularly for air freight," says R. L. Mangold, director of cargo sales for United Air Lines.

"The DC-8 Jet Mainliner we are introducing Sept. 18 will give still greater impetus to the growth of air cargo. Each of these jetliners will carry up to 12,000 lbs of freight, mail and express," he says.

"Machines and machine parts continued during 1958 to rank as the leading air freight commodity in tonnage flown by United. Electrical equipment and parts, third in 1957, moved up to second place while cut flowers dropped to third," the airline executive notes.

Air Fleets Expanding — Airline operators are expanding their cargo fleet tremendously—in some cases doubling it. Wholesale conversions of regular piston-engine passenger planes for cargo work is being done by American Airlines, United, Pan American and others.

All-cargo lines are moving too. Riddle Airlines has ordered 4 British-built Argosies with front end loading. Flying Tigers, Seaboard and Western have ordered fleets of prop-jet CL-44 cargo planes from General Dynamics Canadair Div.

Freight Handling Time Is Slashed

FAST LOADING: The first jet-age airfreighter is this 400 mph Canadair CL-44. It can carry a 65,000-lb payload coast-to-coast. The hinged swing-tail permits unloading in 19 minutes vs. a usual 3 hours.

Now—for FORM TOOLS

. . . complete Stock Service!

these 7 Grades regularly stocked for form tool applications...

- Electrite Double Six* (Type M-2)
- Electrite Corsair* (M3 Type 1)
- Electrite Crusader* (M3 Type 2)
- Electrite No. 1* (Type T-1)
- Electrite No. 19 (Type T-2)
- Electrite Vanadium (Type T-3)
- Electrite Dynavan* (Type T-15)

*Also available in XL® analysis for improved machinability

LATROBE

Metalmasters

LATROBE'S

fully-uniform DESEGATIZED®

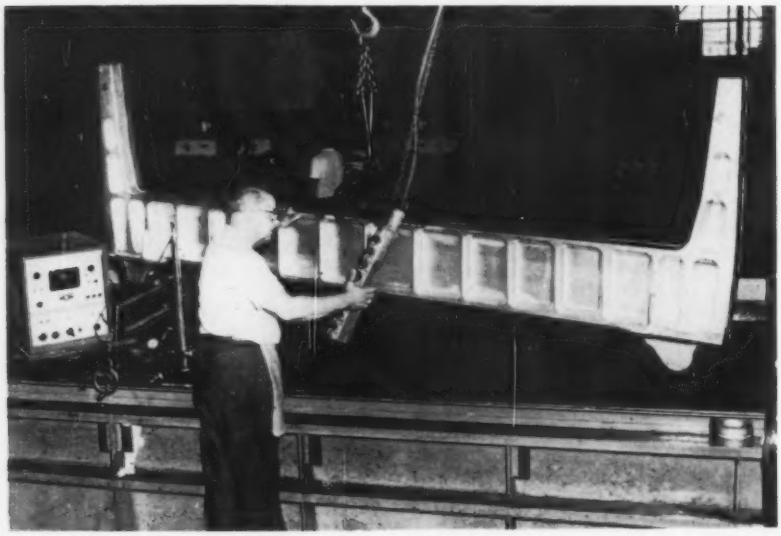
HIGH SPEED STEELS

For stock sizes and technical assistance call your LATROBE representative today! . . . *or write for latest stock list.*

LATROBE STEEL COMPANY
LATROBE, PENNSYLVANIA

BRANCH OFFICES and WAREHOUSES: BOSTON • BUFFALO • CHICAGO CLEVELAND • DAYTON • DETROIT HARTFORD • LOS ANGELES • MILWAUKEE MIAMI • NEW YORK • PHILADELPHIA PITTSBURGH • SAN LEANDRO • TOLEDO

Aluminum Bulkheads for Jetliners



FROM A SINGLE MOLD: Two of these bulkheads, 12 ft in length, weighing 600 lb, and formed from single molds at the Wyman-Gordon Co., North Grafton, Mass., will be used to give added strength to fuselages of Convair commercial jet planes. In previous Convairs such bulkheads required hundreds of separate parts.

Construction Started On Midwest Plant

Construction started last week on the new sheet and tin plate plant of Midwest Steel Corp. at Portage, Ind. The mill is being built by National Steel Corp.

The Midwest plant will be located on the shores of Lake Michigan, nine miles east of Gary. Production is expected to begin sometime in 1961 with about 2200 employees and an annual payroll of approximately $18 million. Approximately 5000 men will be employed during construction of the facility.

The new mill is part of National Steel's $300 million, three year expansion program first announced last winter. Products produced will include electrolytic tinplate, galvanized coils and sheets, and hot- and cold-rolled sheet products.

Albert J. Berdis, president of Midwest and National's Weirton Steel Co. division, presided at a luncheon for 550 invited guests preceeding the groundbreaking. He said the plant will be the "finest, safest and most efficient steel plant yet built."

More Vacuum Melting

Latest type vacuum melting facilities have been added to the investment castings plant of Precision Castparts Corp. at Portland, Ore. The new installation, which went into operation early this month, provides the only plant west of Chicago for the production of investment castings by the vacuum remelting process, according to K. H. Pierce, vice president.

The 100 KVA induction furnace with 3000 cycle motor-generator set has capacity for 50 to 60 lb melts. Capacity can be increased to 120 lb by the use of larger crucibles.

Move to Washington

The National Machine Tool Builders' Assn. will move from its Cleveland headquarters to Washington, Sept. 1, it was announced last week.

The new quarters will be in a newly constructed, three story building at 2123 Wisconsin Ave. The 7500 sq ft to be occupied by the association has been laid out to meet its specific requirements.

Ludlow King, executive vice president of the association, said most of the organization's key personnel will be moved to the new quarters, but that the move will cause no break in association activities.

Seek Transport Cures

Shipper, carrier, and labor spokesmen are helping to develop the wide-ranging Senate study of national transportation problems.

The Senate Commerce Committee has a special study staff of transportation experts, headed by Maj. Gen. John P. Doyle (USAF, Ret.). But the committee also can make use of the knowledge and experience of men who invest in or provide carriage on a daily basis.

More than 20 persons are named to the advisory council which will assist the special staff. These men, says Committee Chairman Magnuson, D., Wash., know all about the ills of the transportation industry. He expects suggestions from them on correcting the ills.

Kaiser to India For Aluminum Plant

Kaiser Aluminum & Chemical Corp. will build an integrated aluminum plant in India. It will be a joint venture with the Birla interests in Indian.

The two organizations have formed the Hindustan Aluminum Corp. Ltd. to build and operate a 20,000-metric ton plant at Rihand in Uttar Pradesh province in Central India.

The project will include related bauxite and alumina facilities.

It will be the largest single U. S. private investment to date in a joint venture with an Indian firm.

style is stainless steel

Stainless Steel is the only surfacing material with a hard lustrous finish that is always in style, withstands exposure to all kinds of wear and has a low maintenance cost for the life of the building.

No other metal offers the freedom of design and fabrication, economy of care and the durable beauty that serves and sells like Stainless Steel.

McLOUTH STEEL CORPORATION, Detroit 17, Michigan

specify

McLOUTH STAINLESS STEEL

HIGH QUALITY SHEET AND STRIP

for architecture

a new, improved ALODINE for aluminum

Cost Saving, Time Saving ALODINE 1200S Pre-Paint Treatment Protects Aluminum Best!

IN LESS TIME—ALODINE 1200S provides increased chemical activity for dramatic reduction in processing time . . . up to 50% in most cases! You get far faster processing than ever before, with the same high quality protection!

WITH LESS EQUIPMENT—You can install an ALODINE 1200S system quickly and conveniently, *without resorting to mechanical bath maintenance!* That means no dangerous, time consuming checking routines with the possibility of bath contamination always present!

AT LESS COST—ALODINE 1200S can be processed through continuous dip in the same time cycle other conversion coatings require for continuous spray lines! This dip technique reduces initial equipment costs, slashes maintenance costs to a minimum and allows aluminum fabricators to utilize conversion coatings more frequently for a wider range of product applications! Whatever the application method—brush, dip, continuous strip or spray—ALODINE 1200S may be the answer to your production problems.

FOR MORE FLEXIBILITY—Most important, its ease of operation, safety in use and versatility enables ALODINE 1200S to answer one of the most perplexing problems inherent in providing corrosion protection and paint bonding qualities for aluminum—the problem of constant, uniform quality. ALODINE 1200S is qualified under Government Specification MIL-C-5541.

Investigate cost saving, time saving ALODINE 1200S today! And whenever you have a chemical finishing requirement for aluminum—any type of aluminum—there's an ALODINE process available to protect or decorate the metal, and anchor the paint finish more securely.

Typical ALODINE 1200S strip line installation at ALSCO, INC. Strip from aluminum coil is fed into Alodine processing baths where it is cleaned, rinsed, deoxidized, rinsed, coated with ALODINE 1200S, rinsed and given a final acidulated rinse. Strip is then rewound, roll coat painted, roller formed into final shape, backed, inspected and packed for final shipment.

Write for Bulletin 1424A describing use of Alodine for aluminum fabrications of all types.

AMCHEM

ALODINE 1200S

another chemical development of **AMCHEM PRODUCTS, INC., Ambler 26, Pa.**
(Formerly American Chemical Paint Co.)

Detroit, Mich. • St. Joseph, Mo. • Niles, Calif. • Windsor, Ont. Amchem and Alodine are registered trademarks of Amchem Products, Inc.

William H. Coleman

Into Missiles and Off the Ground

Carrying with him experience and tested ability, Mr. Coleman reversed Twin Coach's direction.

Through his program, the company was streamlined and strengthened, with profitable results.

WILLIAM H. COLEMAN: He bolstered a faltering company.

▪ When William H. Coleman answered the call of the Twin Coach Co., of Buffalo, N. Y., in 1957, he brought with him the management experience and the tested ability the company needed to lift it from serious financial straits.

In late 1941, Mr. Coleman began his management career with the purchase of a four-man wire fabricating shop operating in a New York City loft. The company was deep into the red and had only the basic machinery necessary to turn out a very limited supply of wire products. Within a year he had managed to pay off the debts and had increased the company's personnel to 16 full time employees.

Growth Continues — Expansion continued through the years and today Banner Metals, Inc., of Los Angeles, which is an out-growth of the loft operation, employs 125 people and has annual sales approaching $2 million.

In the years following 1942 Mr. Coleman developed into a financial expert and an authority on mergers and acquisitions. In addition to being chairman of Banner Metals, he is chairman of Alco Oil & Chemical Corp., Philadelphia, and is a partner in the Cleveland banking firm of Ball, Burge & Kraus.

Back to Twin Coach—But perhaps his most noteworthy accomplishment to date is the way he got Twin Coach off the ground and into the aircraft and missiles parts business.

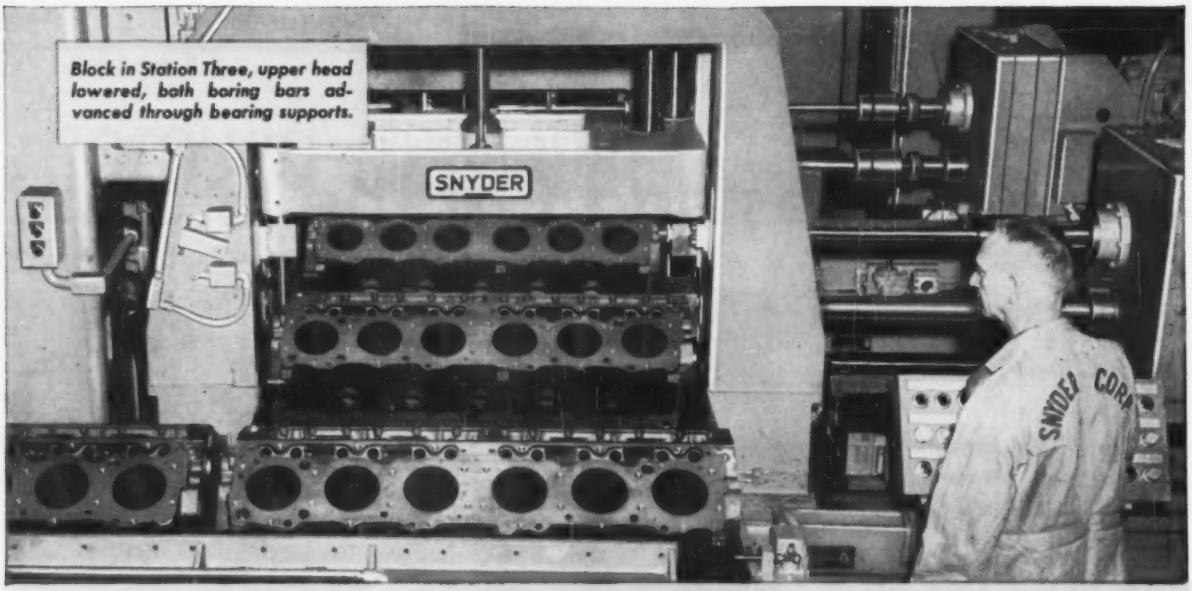
When Twin Coach sent out their call to Mr. Coleman in 1957, the company, once predominantly in the transit bus and vehicle manufacturing business, had overdiversified. Losses were mounting and the future of the firm was all but bright.

Streamlined and Strengthened—Mr. Coleman assumed presidency of the company at a time when defense cutbacks were staggering firms that stood on much firmer ground than Twin Coach and in a period when business was in a general slump.

However, through the efforts of Mr. Coleman and his management team, three subsidiaries which had incurred losses totaling $8.7 million since 1946, were disposed of at a crucial time without having to resort to distress selling. At the same time, profitable segments of the business were strengthened and new lines were developed.

Current Operations — Today Twin Coach is engaged in two operations: the Aircraft Missiles Div., and the Service Parts Div., which supplies parts for vehicles formerly manufactured by the firm.

Presently he is directing a program of merger and acquisition designed to strengthen the firm.



Block in Station Three, upper head lowered, both boring bars advanced through bearing supports.

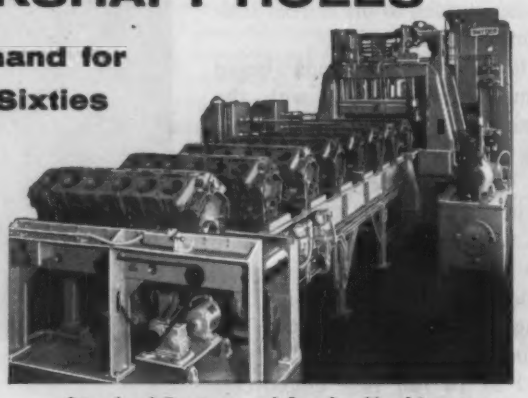
PRECISION BORING OF 42″ LENGTH CAM AND CRANKSHAFT HOLES

SNYDERIZING Meets the Demand for Quality Parts for the Soaring Sixties

This 12-cylinder block is for heavy duty truck and marine engines aimed at taking a bigger bite of this booming market. Our Snyder special 7-station machine is helping this manufacturer SNYDERIZE for the Soaring Sixties by providing boring tolerances which make his product outstanding.

In regular production at a rate of 31 pieces per hour, main and camshaft bearing holes are rough and semi-finish bored simultaneously with all diameters held to manufacturers' specifications for alignment, roundness and concentricity. The distributor hole is also semi-finish bored in this machine to establish proper location to cam and crank bores.

Advanced engineering, both in product and production machines, is the best possible preparation for the competition of the next decade. We'll be happy to show you, too, how to SNYDERIZE for the Soaring Sixties to gain more efficient parts handling, gaging, assembly and machining. Write or phone for new brochure on machines for profit improvement.



Standard Features of Snyder Machines

1. SNYDER UNITS equipped with hardened and ground steel ways.
2. Building block principle throughout.
3. Automatic lubrication.
4. Walking beam transfer bar.
5. J.I.C. Standards throughout.
6. Electrical interlocks and full depth circuit throughout.
7. Panels equipped with SNYDER CIRCUIT SLEUTH.

SNYDER CORPORATION

(Formerly Snyder Tool & Engineering Company)

3400 E. LAFAYETTE—DETROIT 7, MICHIGAN
Phone: LO 7-0123

Economic Signs Still Point Up

Effects of the steel strike brought a drop in the industrial production index during July.

But, despite this decline, spending continued strong with gains for durables.

▪ Some major economic guideposts turned downward in July with the steel strike—but not all. And those which remained up or increased were perhaps more significant than those which fell.

Industrial production, clearly reflecting the steel shutdown, declined. The seasonally adjusted index of the Federal Reserve Board was 153 for July—a two point dip from June's all-time record. Undoubtedly industrial output will keep declining this month.

More to Come — Length of the strike will have an increasingly important effect on manufacturing output. It has been pointed out steel users will have below normal stocks by the end of August. Many steel consuming industries will need to cut back operations if the strike lasts through September 15.

But while the strike pushed the index into an overall decline, the news wasn't all bad. The output of other durable goods continued advancing.

Comeback By Durables—Record production by the truck and farm machinery industries was a factor. Other industrial and commercial industries were returning to pre-recession levels, according to the FRB. In addition, consumer goods output hit a new peak, helped by increases made in automotive and television manufacturing.

This continued strength of the durable goods industries is reassuring. The decline in demand for durables was a major factor in the 1958 recession.

Best of Three—Spending for durable goods last year dropped almost $3 billion below 1957 levels. The low point came in the second quarter when (on a seasonally adjusted annual rate) durable goods purchases amounted to $36.7 billion. Spending increased from that point until reaching a fourth quarter rate of $39.8 billion.

Since then, the gains in durables have topped those of either non-durables or services. During the first six months of this year, spending for durables rose $4.3 billion. In the same period, spending for non-durables went up only $4.1 billion. Services increased $3.7 billion beyond their level at the conclusion of 1958.

More U.S.–Russian Trade?

▪ Premier Khrushchev's coming visit has stirred up more talk about efforts to increase U. S.-Russian trade. But all the excitement will probably end in only talk.

That's because Russian trade efforts are inevitably bound up in a larger interest: Politics. A recent study by the U. S. Chamber of Commerce, "What the Communist Offensive Means to American Business" underscores this Soviet trade philosophy.

Only One Part—"The (Russian) economic offensive does not operate in isolation, but is strategically and tactically coordinated with political, diplomatic, psychological, and military operational techniques for conducting foreign relations. It is only one component . . . of a highly organized system designed to wage protracted political warfare," the report states.

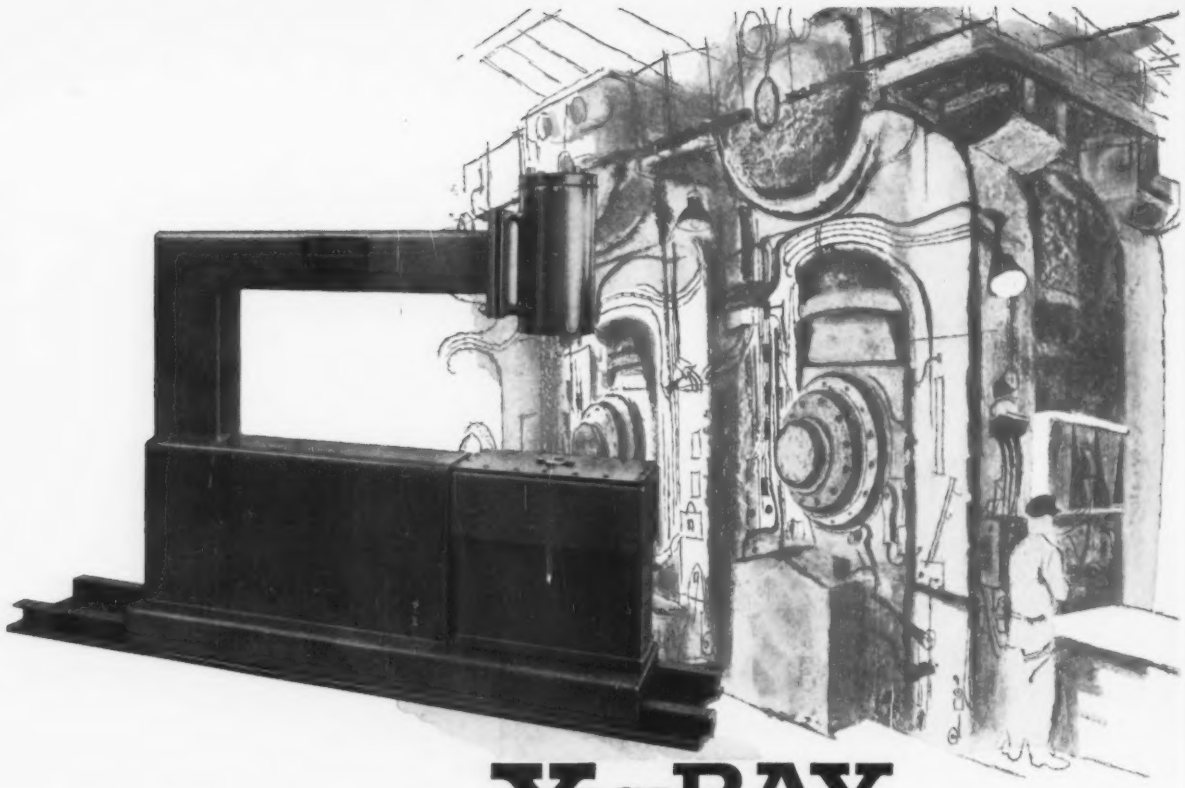
It concludes that the Communist role in world trade probably doesn't represent an immediate economic threat to the United States. It's further pointed out, however, that "unsettling" Russian trade practices, such as exporting at below-cost prices, may become more important.

More Than Cold War—Another review of the Russian trade question made by the Morgan Guaranty Survey says roadblocks to Soviet-U. S. trade go deeper than cold war tension. Russia's role as a trader has been slight and sporadic. The USSR has never been interested in purchasing large quantities of consumer goods in this country.

Personal Income Rose During July

Personal income, rising $300 million in July for a seasonally adjusted annual rate of $384.1 billion, appeared unaffected by the strike.

Actually wage and salary payments, considered on an annual rate, were down $500 million. The reduction was primarily in the payrolls of the steel, mining, and transportation industries. These losses were largely offset by payroll gains in other industries including rubber, lumber, and machinery.



NEW PULSED XACTRAY

cuts metal rolling costs 6 ways

XactRAY non-contact thickness gauges have a new look . . . and it's prompting smart metals men to take a new look at their cost balance sheets. Today's XactRAYs incorporate advanced components – such as pulsed X-ray sources greatly reduced in size and total radiation, and Weston's highly stable Vamistor® type resistors. At the same time, all the advantages which have earned XactRAY its high acceptance in the metals industry – such as absolute thickness calibration, unchanging for the life of the instrument – have been retained.

Whatever you roll . . . from foil to plate . . . ferrous, non-ferrous, or alloy . . . you'll find XactRAY can contribute dollar-savings to your operation.

- **SCRAP AND START-UP LOSSES ARE REDUCED**
  XactRAY offers faster response to thickness deviation than any competitive gauge. You can adjust a new run of strip to within tolerance in seconds. This response – together with automatic, absolute calibration–permits drastic reductions in start-up wastage and returned material.
- **CLOSER TOLERANCES CUT REJECTS . . . INCREASE CAPABILITIES**
  With XactRAY, it's possible to achieve tolerances as close as ± .000010". You can roll more premium-grade strip . . . or record thickness over every running inch in order to locate premium-grade sections. With automatic, continuous traversal mountings, XactRAY gives you edge-to-edge as well as end-to-end monitoring . . . helps control "crowning" deviations.
- **ROLLING SPEEDS CAN BE INCREASED**
  XactRAY's accuracy is independent of strip speed . . . it will gauge with equal precision metal moving at 6 or 6000 feet per second. Vertical movements of the strip don't affect accuracy either.
- **NO INTERFERENCE WITH YOUR PROCESS**
  The new XactRAY is so compact and requires so little maintenance that it can be installed almost anywhere on your line . . . for maximum efficiency and minimum interference. Many users operate XactRAYs deep within their mills – even close to hot rolls. A broad variety of mountings permits custom-fitting of gauge to equipment. Threading is facilitated by the wide gap between X-ray source and receiver.
- **MANPOWER IS RELEASED FOR PRODUCTIVE TASKS**
  Continuous XactRAY gauging, together with automatic controls and/or deviation alarms, requires only occasional monitoring. Cumbersome hand-miking is, of course, eliminated – with consequent savings in man-hours and mill-hours.
- **EASY INTEGRATION WITH CONTROLS**
  XactRAY integrates readily with existing or XactRAY-MATIC controls for economical "closed loop" regulation of thickness.

For full information, contact your local Daystrom-Weston representative . . . or write to Daystrom-Weston Sales Division, Newark 12, N. J. *In Canada: Daystrom Ltd., 840 Caledonia Rd., Toronto 19, Ont. Export: Daystrom Int'l., 100 Empire St., Newark 12, N. J.*

DAYSTROM WESTON *Industrial Gauges*

WORLD LEADERS IN MEASUREMENT AND CONTROL

MARKETING TEAM AT BUDD CO.: Planning introduction of new Monautronic V-2 welding control are, l. to r., John Poth, product manager; H. A. Boas, Jr., marketing VP; and sales manager John Coullard.

How the "Marketing Concept" Helps Launch New Products

At the Budd Co., the marketing concept concentrates all areas of management on the job of introducing a new product.

An example of what could happen without it: A field survey brought three design changes in an item that seemed "ready to go."

▪ This age of diversification—new products and new divisions, mergers and acquisitions — has spawned a new management problem, that of integrating these new lines into an existing company. And doing it at a profit.

Fortunately, there is a special treatment for the corporate indigestion that often follows a heavy intake of new products. It is usually called "The Marketing Concept."

The Marketing Concept — One way to describe this new idea is to say that all phases of a business must be customer-oriented. It means knowing your market and its needs, and coordinating all departments—from research through sales — to serve those needs most effectively.

The Budd Co., with headquarters in Philadelphia, is a case in point. Back in 1955 its management took a hard look at its current position and future prospects. Budd

Modern Marketing
First of a Series

NEXT WEEK: Code Your List

Lists of customers and prospects become valuable sales tools when they are coded by SIC groups. Who tackles this project, and how, is the subject of next week's article.

was then married to the ground transportation industry. A good chunk of its business was in automotive bodies and parts; the rest was geared to the railroad field.

Budd decided to make some drastic changes to insure its future. The course was obvious.

The Answer: Diversify—Within a few years Budd was in plastics (Continental-Diamond Fibre Corp.); defense (jet engine, missile and airframe components, and nuclear reactor parts); nuclear systems (industrial radiography units and encapsulation) and testing-measuring (Tatnall Measuring Systems Co.)

It soon became clear that a handful of old friends had been augmented by hundreds of customers and thousands of prospects. For men used to selling big-ticket orders on the golf course this was a revolution.

In the surge of the company's expansion the air was full of problems demanding immediate solution; problems in sales, manufacturing and distribution—all requiring coordination and control.

Budd's Answer—So management adopted the marketing concept. This is easier said than done—and after two years there is still much to do.

But the change to date is remarkable. It came about for three reasons: (1) Budd management knew they had a problem; (2) they knew where the trouble lay; and (3) they were willing to do something about it.

Budd's problem was lack of information about the vast new markets the company had entered. And even if that could be secured there was still the matter of how to use it.

A Strong Committee—President Edward G. Budd, Jr., began by appointing to the policy committee a Director of Marketing. Its members, in addition to the president, are the executive vice-president and the vice-presidents in charge of engineering, manufacturing and finance, the comptroller and the vice-president in charge of the newer (non-transportation industry) areas. Herbert A. Boas, Jr., who named Mr. Boas director of marketing.

First, Internal Selling—Mr. Boas and his market research manager, J. C. Collins, had first to sell the marketing concept to Budd executives at all levels; to convince men in sales, research engineering and manufacturing that marketing could help them; that they didn't care

How Marketing Works on a New Product

When a new product seems "ready to go" it may not be ready at all.

Modern marketing calls for defining its potential by industry, area and volume; pricing and service must be worked out.

A field survey may show the need for some design changes.

H. A. BOAS, Jr., marketing VP, plans new product sales strategy.

▪ Let's assume that your research and development group had been working on a new machine since 1943. Finally, in 1959, they announced that it was ready to go. Not only had the concept been explored with some users of similar equipment, but a number of customer ideas had been built in to it.

Further, it had actually been used (under controlled conditions) in your own production. Finally, it is unique in its method of control. Would you release it to engineering, manufacturing and sales?

Is It Ready?—If you subscribe to and honestly believe in the marketing concept the answer is a flat NO!

This is precisely what happened at the Budd Co. If you query H. A. Boas, Jr., Budd's marketing vp, he'll agree that a year ago the answer would have been "yes."

The reasons for this change in company thinking go back to 1958, when president E. G. Budd, Jr.,

was director of marketing when he was named to this committee, is now vice-president, marketing.

On the company organization chart this is a staff committee. But since each member is a company officer, its suggestions are usually followed.

The Committee's Job—This is not to suggest that Budd is run by committee—or that division heads report to the policy committee. The committee's job is advisory in such areas as long range sales plans, product planning, research, organization, budgets, etc.

With the marketing vice-president on the policy committee, the usual problem of converting marketing plans into reality is much closer to a solution. Without that sort of setup, many companies permit sales, research and engineering executives to decide whether or not to go along with marketing recommendations. Budd feels that such activities must be coordinated. The step-by-step study (see below) on the marketing of a new welding control is a case in point.

"Ready to Roll"?—After nearly 15 years of work, Research & Development was ready to release this new electronic welding control to manufacturing. The latter were anxious to get going too. And sales saw it as an ocean breeze on a 100-degree day.

But Market Research waved a red flag. Marketing vp Boas gave a market-oriented opinion to the policy committee: "This unit should be tested on a production line before you give it out; we'll need that sort of cost data to sell it effectively."

More Data Needed — Furthermore, he said, we haven't nailed down the size or shape of the market. We'll have to line up territories and train salesmen. And we've got to check potential customers to be sure this is what they want. We can't prepare effective advertising or promotion until we have more of these facts.

As a result, introduction of the device was held up. For the story of what market research discovered and what further tests and changes were made, see the study below.

---

where the credit landed, as long as profits improved.

So, when a new resistance welding control appeared "ready to go" the missionary work of the market men paid off. Mr. Boas was able to convince the company policy committee that nothing should be done about manufacturing or sales until marketing had a chance to study it. He made some suggestions:

Centralize responsibility—"Right now," he said, "both our airframe people, who use the new control, and the R & D people talk to potential users. A new electronics section would centralize responsibility both internally and externally."

Define the Market — "Let's determine which industries are our prime prospects, where they're located, and our sales potential," he suggested.

Draw Up a Written Plan—With Marketing and the Policy Committee, a new section sales manager should prepare an outline of sales goals, profit margins, discounts, distribution channels, territories and quotas.

Prepare Promotion — Advertising will join by making literature, promotion, exhibit and media plans. Advertising is integrated with marketing at Budd: Once a week the advertising manager meets with the market research manager and the advertising agency people.

Make a Field Survey—"So we'd better talk to our prospects," Mr. Boas suggested, "people who now use mass production resistance welding. This could modify our design or suggest other changes."

All of these suggestions were carried out several months before the scheduled introduction date of the new control. It was given a name, "Monautronic"; salesmen were hired and technically trained for several months in the lab.

Field Study Pays Off — Budd doesn't have a big market research department; it has a market research manager, J. C. Collins, and a small staff. To do the field survey, Mr. Collins retained an outside research organization, brought the field men to Philadelphia for a two-day indoctrination on the new control.

These men interviewed 184 users of resistance welding equipment in the automotive and aircraft fields. They uncovered at least three technical items which Budd management felt should be changed before the unit was offered for sale:

(1) Most of the aircraft industry, a major potential market, uses 3-phase current. The protype model was single phase. **Solution:** Develop a 3-phase model for the line.

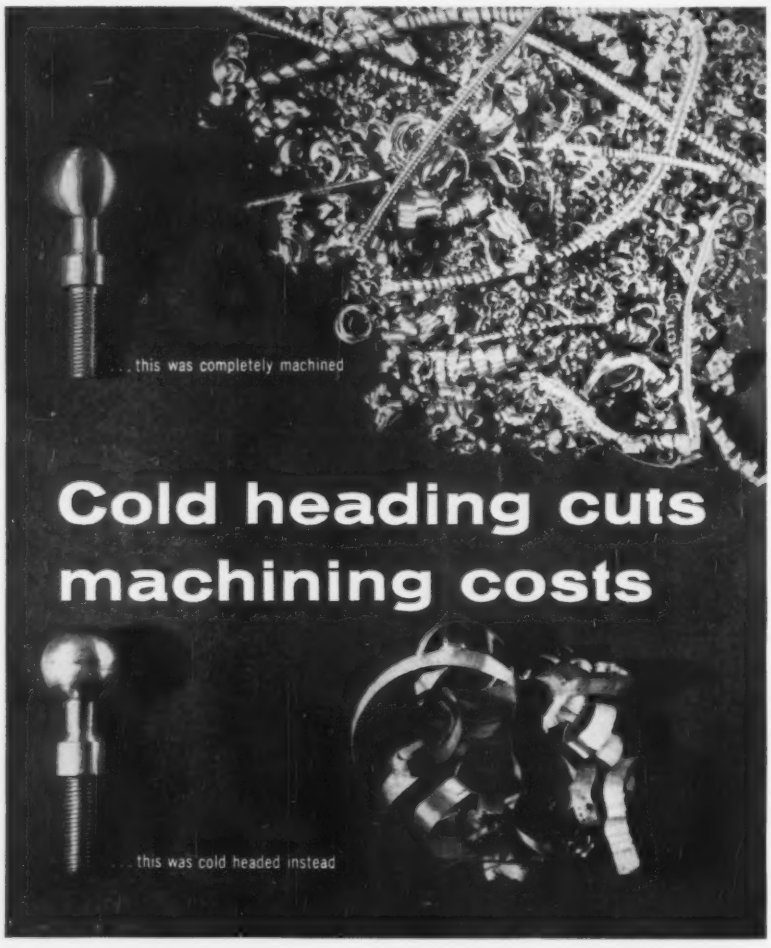
(2) Automotive, another big potential user, often requires equipment to meet JIC standards. **Solution:** Modify the design.

(3) Customers wanted performance data. **Solution:** Put it on a line in Budd's auto body shop side by side with competing units.

The Payoff — Only the profit statement will tell just how worthwhile this program has been—or will be on other Budd products. But this much is obvious: It has vastly improved chances for a black-ink operation.

Reprints of this article are available as long as the supply lasts. Write Reader Service Dept., The IRON AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.

ECONOMIC FACTS ON FASTENERS



- **Buy cold headed parts . . . produced with less scrap, in less time than machining**
- **You get stronger items, in one piece, at big savings**

Above you see an automotive part formerly machined, along with scrap turnings. Compare with the piece below—where metal has been forced to cold flow into shape in one of RB&W's cold heading machines. (That's the same equipment that produces RB&W bolts, thousands per hour, at rock bottom cost.)

It's obvious that cold headed parts save money. (Little or *no* scrap loss, faster production.) Not so apparent is the fact that the cold headed piece is actually *stronger*, too. The cold working does it. Also gives a better finish and oftentimes closer tolerances.

Cold headers used for fasteners can be adapted to almost any small parts now machined or forged as one or more pieces. That's where an expert can help you. Avail yourself of the RB&W Fastener Man to analyze your requirements. People who have already done so are profiting from RB&W's vast cold heading facilities and ability to supply large volumes at substantial savings. Russell, Burdsall & Ward Bolt and Nut Company.

R B & W
115th year

Plants at: Port Chester, N. Y.; Coraopolis, Pa.; Rock Falls, Ill.; Los Angeles, Calif. **Additional sales offices at:** Ardmore (Phila.), Pa.; Pittsburgh; Detroit; Chicago; Dallas; San Francisco. **Sales agents at:** Milwaukee; New Orleans; Denver; Fargo. **Distributors from coast to coast.**

Superior joints in heavy duty products

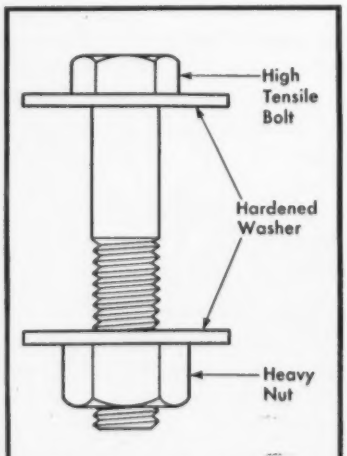
. . . achieved with RB&W High Strength Bolts

Plenty of experience now proves you can stop fastener failures with high strength bolts. Especially in products subjected to much vibration in service. Properly tightened, these bolts make the joints not only *permanently* tight, but *stronger*.

Here's why: A joint is only as strong as the *residual tension* left in fasteners after tightening. The more you tighten, the better it is.

RB&W High Strength Bolts allow a high level of tightening. Friction between bolted surfaces increases with the tightening, so that slippage of the joined members against each other can't take place. This makes the joint better able to resist external forces which try to shear or separate the joint.

In addition, with high residual tension, these fasteners are also more immune to the fatiguing and loosening effects of loads which constantly vary, such as vibration.



RB&W High Strength Bolts conform to ASTM A325. They're made of a selected grade of high carbon steel for proper balance of hardness and ductility. Use of hardened washers distributes their high clamping force over larger area.

As a result, one manufacturer of heavy duty shaker equipment has found them the only answer in troublesome joints which formerly required constant maintenance. Others are ending rivet failure and costly replacement in cranes, ore unloaders and freight cars with RB&W High Strength Bolts.

If you're making similar or related heavy duty equipment, talk it over with an RB&W Fastener Man.

RB&W FASTENERS—STRONG POINT OF ANY ASSEMBLY

Goal for '60—Almost 7 Million

GM Executives Predict 10 Pct Sales Gain

It's preview time and auto leaders are out with their first predictions for next year.

One surprise: Drop in imports predicted by Cadillac general manager.—By A. E. Fleming.

▪ The first of the annual shouts heard 'round the automotive world rang out loud and clear as Cadillac and Oldsmobile uncloaked their 1960 models at press previews last week.

The cars will be in dealer showrooms Oct. 2 for Cadillac and Oct. 1 for the Olds.

The previews were also the first of the annual round of predictions for the coming model year. Here is how James M. Roche, general manager of Cadillac, and Jack F. Wolfram, Oldsmobile general manager, call their shots for 1960:

New car sales in the U. S. will climb to 6.9 million in 1960, including domestic and foreign makes. This is about 10 pct more than 1959's estimated 6.3 million deliveries.

Foreign car demand will decline. Eyebrows raised when Mr. Roche forecast a drop in imports to 500,000 in 1960 from 600,000 this year. In obvious reference to the upcoming Big Three small cars, he said, "Foreign models will face very stiff competition in the coming year."

Medium Price Outlook — Observed Wolfram: "In a rising economy, more people will buy more comfortable, superior full-size automobiles. I believe the medium-price market will continue to grow numerically.

Facts tend to substantiate Mr. Wolfram's optimism. In 1959, for the first time in four years, the medium-price class is experiencing a sales increase. This market is up 16 pct over last year. Oldsmobile is 21 pct ahead of 1958 (238,472 sales through Aug. 10 against 198,326 a year earlier), and its 26 pct share of medium-price car sales equals the highest slice in division history.

The steel strike could harm auto production in another month. Cadillac starts 1960 model output Sept. 8. "We can live off our own fat for a while," said Mr. Roche, "And we'll be able to get a good sampling out to our dealers. But if the strike isn't settled by public introduction time, we'll eventually be affected. We can't provide against an indefinite future."

Olds and Steel—Oldsmobile production will begin early in September and all 11,000 Oldsmobile employes in Lansing will be back to work soon after that. Continuation of steady employment will depend

Men and Materials Add to Muffler Life

PERFECT FIT: An inspector at AP Parts Corp.'s Grand Haven, Mich., plant is making sure that the inner shell and outer head of these mufflers fit properly. The're made of Jones & Laughlin Steel Corp.'s JalZinc.

on the duration of the steel strike.

"The strike won't affect our initial 1960 production," Wolfram said. "We expect to have a normal supply of new models in dealer hands for display and enough for deliveries to customers for some time to come."

There are signs of a price rise. Cadillac hasn't raised car prices since the introduction of 1958 models in late 1957. According to Mr. Roche, Cadillac wage costs since that time have risen 8 pct, steel has gone up 3 pct, aluminum 4 pct and zinc 10 pct. These are important factors in the cost of an automobile. "But we haven't determined our prices yet and we won't finalize them until the steel problem is settled," he emphasized.

More Economy—There will be more emphasis on economy in the medium-price field. Olds has cut the horsepower of its Dynamic 88 engine from 270 to 240. Adaptation of the engine for use with regular fuels instead of premium fuels was accomplished through design changes in the combustion chamber contour, piston and camshaft and a drop in compression ratio to 8.75 from 9.75.

Olds has also lowered rear axle ratios to 2.87 on the Dynamic 88, 3.07 on the Super 88 and 3.23 on the 98. This will result in up to 7 pct lower engine speeds, better economy, less wear and quieter engine operation.

Styling Change—There's a trend toward more subtle styling. Continuity of design has always been Cadillac's most distinguished external feature. And the 1960 Cadillac is easily recognized. But attempts have been made to achieve a minimum of ornamentation. There's less chrome, cleaner lines on all models.

The Oldsmobile changes are more startling. The tubular tail fins and rear trunk panel have been eliminated. More classic, "flight deck" styling has been adopted front and rear. The swept back design of the front fenders and bumpers give the new model 2¼ to 3½ in. more maneuverability in parking situations.

Automotive Production

WEEK ENDING	CARS	TRUCKS
Aug. 22, 1959*	32,983	15,560
Aug. 15, 1959	72,603	11,064
Aug. 23, 1958	25,918	8,895
Aug. 16, 1958	59,677	12,976
TO DATE 1959	3,862,385	783,130
TO DATE 1958	2,589,290	522,465

*Preliminary Source: Ward's Reports

Lighter Weight — Body dimensions of the Olds have not changed a great deal. The wheelbase is the same (123.0 on the 88 and 126.3 on the 98). The trend is still 61 in. Overall length has been reduced an inch on the 88 and two inches on the 98. Some 15-20 lb have been shaved off the 88, while the 98 is 30 lb lighter.

Air suspension is being re-evaluated. The trend in air ride is obviously downward for Cadillac, Oldsmobile and the rest of the industry. Olds won't even offer it at the beginning of the 1960 model year. Engineers are striving to improve it and a newer version may come out around January.

The Bull of the Woods

I WISH I'D DONE LIKE ED YEARS AGO-- HE BOUGHT A FARM AN' HAS GOT IT ALL PAID FER, AN' NOW WHEN WORK GITS SLACK HE'S GOT HIS MILK COWS, HENS, HOGS AN' INDEPENDENCE!
YEH, BUT HE'S TOO WORN OUT NOW TO WORK ALL DAY IN TH' SHOP AN' ALL NIGHT ON TH' FARM, SO NOW HE HAS TO WORK IN TH' SHOP TO HIRE HELP TO WORK ON TH' FARM!
YOU CAN'T WIN! I'VE RAISED PUPS, CHICKENS, RABBITS, AND CANARIES TO PREPARE FOR MY OLD AGE... BUT WHILE I WORKED FOR THEM, THEY WOULDN'T FOR ME!
T.M. Reg. U.S. Pat. Off. © 1959 by NEA Service, Inc.
INDEPENDENCE

Falcon on TV

Ford Motor Co. will introduce its new economy car, the Falcon, on Sept. 2 via a two-way closed-circuit television news conference. Some 2,000 press, radio and TV representatives will attend simultaneous telecasts in 21 cities.

It will make the first such use of closed-circuit television and, in terms of number of participants, may be the largest news conference ever held.

Dart Plans

The new 118 in. wheelbase Dodge Dart will be built at plants in Detroit, St. Louis, Newark (Del.), and Los Angeles.

All six basic Dart body types will be produced at plants in the four cities, except the convertible, which won't be built in Los Angeles.

IT'S LIGHTER THAN YOU THINK!

WHEN DIE CAST with ZAMAK

These tiny zinc die cast electrical contact socket cups have a minimum wall thickness of .005"— **the thinnest wall section ever die cast.** Designed by Omaton Division of BURNDY CORPORATION, they more than meet Government specifications and are adaptable for many types of solderless multi-contact connectors.

It takes 10,371 of the smallest cups to weigh a pound and they are 20% lighter than the ones formerly made from drawn steel. Each is precision die cast to a remarkable degree of uniformity and accuracy, despite the complex design.

Such extremely thin-wall sections—possible only with zinc die castings—**frequently eliminate competition from all other materials and production methods.** In addition, ZAMAK zinc die castings provide many more advantages —and all at lower cost.

HORSE HEAD® SPECIAL ZINC AND HORSE HEAD ZAMAK ARE PRODUCED BY

THE NEW JERSEY ZINC COMPANY

DEVELOPERS OF THE ONLY STANDARD ZINC DIE CASTING ALLOYS IN USE TODAY

160 Front Street • New York 38, N. Y.

HORSE HEAD PRODUCTS®

COST CONTROL

PRODUCTION DOLLARS WORK HARDER FOR YOU WITH IBM DATA PROCESSING

Exceeding estimates? What do materials cost? What is the labor utilization? What are the causes of excessive indirect costs? How do current costs compare with standards and budgets?

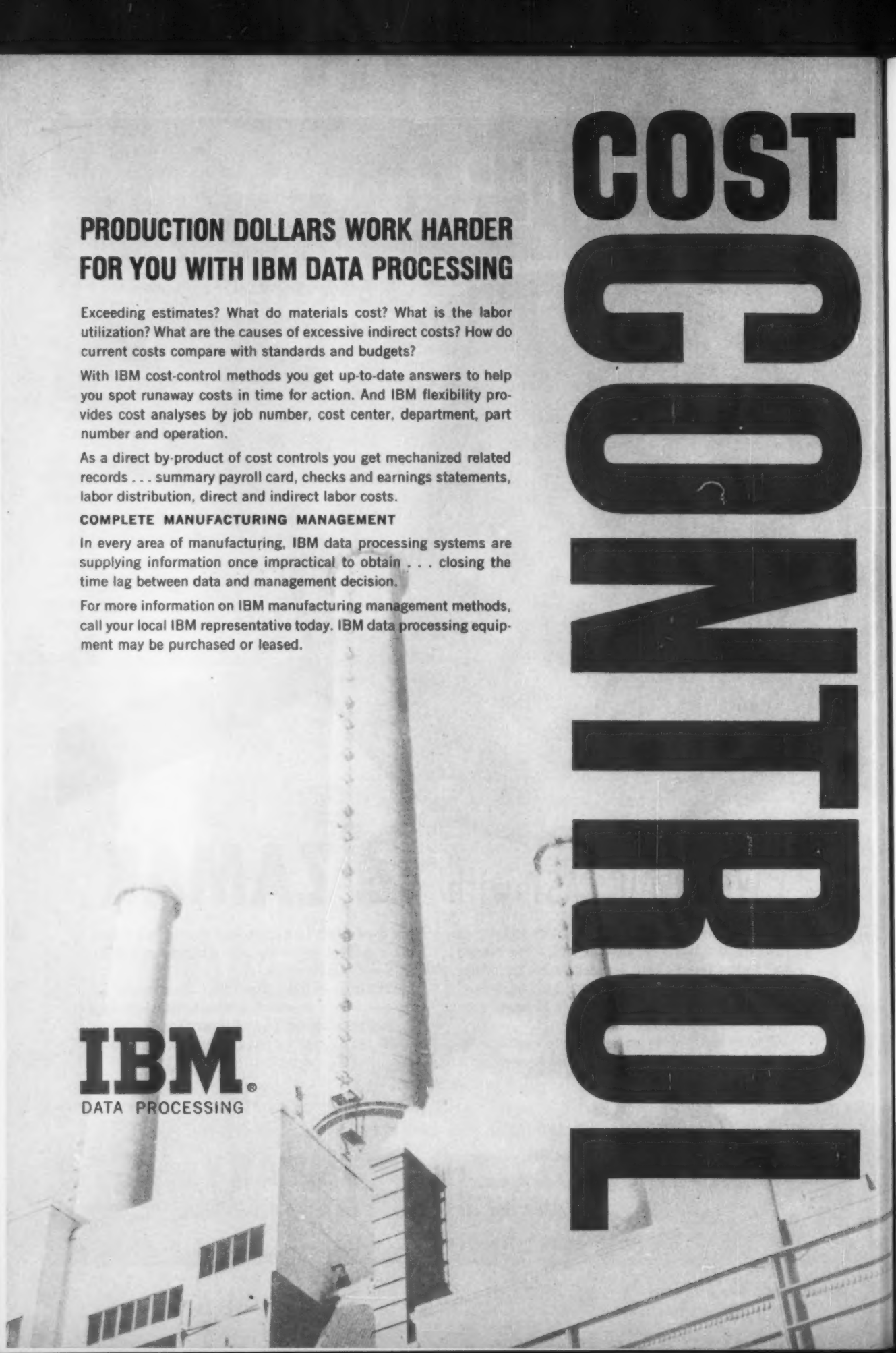
With IBM cost-control methods you get up-to-date answers to help you spot runaway costs in time for action. And IBM flexibility provides cost analyses by job number, cost center, department, part number and operation.

As a direct by-product of cost controls you get mechanized related records . . . summary payroll card, checks and earnings statements, labor distribution, direct and indirect labor costs.

COMPLETE MANUFACTURING MANAGEMENT

In every area of manufacturing, IBM data processing systems are supplying information once impractical to obtain . . . closing the time lag between data and management decision.

For more information on IBM manufacturing management methods, call your local IBM representative today. IBM data processing equipment may be purchased or leased.



IBM®
DATA PROCESSING

Are New Tax Sources Needed?

National Sales Tax May Be Last Untapped Source

Commerce Secretary wants to levy excise taxes on nearly all manufactured products.

Congress has spurned the idea of a national sales tax before, but other tax sources are limited.—By G. H. Baker.

▪ The possibility of a national sales tax is in the news again. The new Secretary of Commerce, Frederick H. Mueller, is making it clear that as long as government revenue needs are high, he intends to fight for equalization of the present hodge-podge of excise taxes.

What this means, of course, is a broad national sales tax, applying to all manufactured products except possibly food, and collected at the manufacturing level.

Tax Discrimination—"Why tax some manufacturers and not others?" Mr. Mueller asks. Lawn mowers bear a federal excise tax, but furniture does not. Are baby lotions and women's purses "luxuries?" The Internal Revenue Service says they are, but evening dress and highball glasses are not, say the government's tax experts.

A national sales tax has been discussed off and on for many years, but has never progressed very far in Congress. Up to now, Congress has been able to squeak through each year, except this year, with just about enough revenue to pay all the bills.

Unmined Reserve—Talk of a national sales tax now is really spading the tax ground for the future. For, come the next national emergency, the Congress will inevitably have to turn to new sources of revenue. And a national sales tax represents the last great untapped source.

As Joel Barlow, Washington tax expert, puts it: "The government has reached the limits of potential in personal income taxes and corporation income taxes. These sources are mined out. A national sales tax is our last untapped source. Sooner or later we will have to start paying for the cold war, and a national sales tax will then become inevitable."

Aid for Poor Countries

A new international organization to make super easy-credit loans to help backward nations develop resources and industry is being proposed by the Eisenhower Administration.

International Development Association (IDA) would become the "soft loan" division of the present World Bank. Members of the World Bank would subscribe to make up an initial capital of $1 billion for the new lending agency. The U. S. would be asked to put up $320 million over five years, half of it immediately.

For the Needy—Underdeveloped countries could secure a loan from the proposed IDA, although they could not meet the regular commercial interest and collateral terms of the World Bank.

The proposal was first made by Sen. A. S. Mike Monroney, D., Okla., and after study is being endorsed by an Administration committee headed by Treasury Secretary Robert Anderson. It will be presented to a meeting of governors of the World Bank in late September.

Military to Shun Party Line

▪ The Pentagon, embarrassed at disclosures of fancy entertaining by defense contractors, is telling officers and officials to duck plush parties.

The new order is a direct result of testimony recently presented to the Hebert subcommittee (of the House Armed Services Committee) which is looking into reports that some defense contractors have taken undue advantage of the cost-plus features of their government contracts.

Too Many Parties—Reports of expensive parties at private resorts have been criticized by Rep. F. Edward Hebert, D., La., the subcommittee chairman, as wasteful and unnecessary. Mr. Hebert also has rapped what he calls the many "big time Charlie" cocktail parties given in Washington frequently by firms holding defense contracts.

Rep. Hebert points out that the taxpayer is, in effect, paying for this entertaining, since the contractors and subcontractors are simply adding the cost of the parties to their bills and passing them on to the U. S. Treasury.

Do you
make or buy

MECHANICAL CONTROL CABLE ASSEMBLIES?

Are you getting the right wire cord or wire rope plus the best fittings that will save time, labor, cost, and improve appearance on your product?

Whether your product is a hoist, a tool, a tractor, a boat, an overhead door, or window sash, there are a 1001 types, sizes, and grades of wire cord, wire rope, and fittings available to you — *and Macwhyte has them all!*

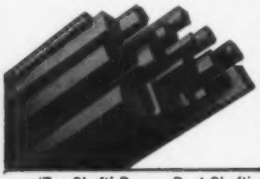
So whether you make or buy — let us give you the benefit of our suggestions. You can rely on our recommendations, for we are wire-rope manufacturing specialists.

Catalog 5601 available on request.

172

MACWHYTE
Wire Rope COMPANY
2906 Fourteenth Avenue, Kenosha, Wisconsin
WIRE ROPE WITH A PURPOSE... TO SERVE YOU BETTER!

Brass & Bronze Free-Cutting Rods

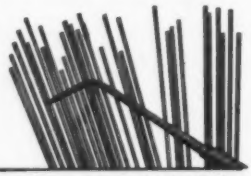


Extruded Brass Shapes

'Tru Shaft' Bronze Boat Shafting

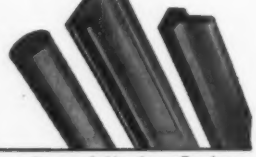
Brass Wire

Bronze Welding Rods

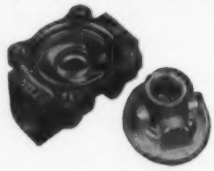


Titan
quality metals

Brass & Bronze Forging Rods



Brass, Bronze & Aluminum Forgings



Brass Pressure Die Castings

Machined Parts

Get these 2 free booklets!

Write us on your letterhead

Rod Products 24 pages

Forgings 32 pages

Titan® METAL MANUFACTURING COMPANY
DIVISION OF CERRO DE PASCO CORPORATION
Bellefonte, Pa. Newark, Calif.
OFFICES AND AGENCIES IN PRINCIPAL CITIES

Shipbuilding: It's East Vs West

Farwest Fights To Hold Its Bidding Edge

Shipbuilders in East and Gulf Coast areas want Congress to end the West Coast's 6 pct bidding advantage.

All-out fight shapes up as Farwest shipyards map battle plans.—By R. R. Kay.

▪ Another tug-of-war between the East and West Coasts is coming into sharp focus.

First there was the battle to shift defense contracts eastward. That's still going on in Congress.

All About Ships—Now there's a new hassle brewing. Multi-million dollar shipbuilding contracts are involved. And you can bet that West Coast shipbuilders will make an all-out fight to get what they feel is a fair share.

Here's what the squabble is all about: The Merchant Marine Act of 1936 gave the West Coast shipbuilding industry a six percent bidding advantage over East and Gulf coast yards. Congress passed this law (1) to keep West Coast yards competitive, and (2) to preserve the supply of skilled workers in case of war.

Arguments for Change — But East and Gulf yards want Congress to repeal the six percent advantage of West Coast yards. Right now there are two bills before the House Merchant Marine and Fisheries Committee to do away with it.

Eastern yards say that higher costs of building ships no longer exist on the West Coast. They insist that costs are even because the Farwest now has basic steelmaking plants.

. . . and Those Against—J. M. Ets-Hokin, chairman of California Governor Brown's Committee on Shipbuilding and Ship Repairs says, "We can easily substantiate a 12 pct differential if we marshall all the facts."

He claims the reason West Coast bids have been closer to those of Eastern firms recently is that "our yards are operating at a lower profit just to get the work."

Next month at San Francisco a coastwide group will map battle strategy.

What's Involved—Who's behind it? The Governor's Committee, the San Francisco Mayor's Shipbuilding Committee, and the Pacific Coast Metal Trades District Council. There's a great deal at stake. West Coast shipyards now employ 15,000 workers.

Mr. Ets-Hokin says that many East and Gulf Coast Senators are consolidated against the West. The West Coast states have only six Senators. What to do about it? The San Francisco meeting is inviting the Senators from the 13 Western states, including Alaska, and Hawaii. That would even up the score—if they give their support.

The controversy promises to be a hot one.

Tartar Starts on Deadly Journey

DEFENSE AT SEA: The Navy's newest missile, the Tartar, leaves launcher and heads for target from deck of the USS Norton Sound. The supersonic weapon—developed by Convair Div. of General Dynamics Corp.—will be primary antiaircraft defense aboard destroyers.

new tracer from LeBlond!

REGAL TRACE

new principle, new design, new convenience, new price... as low as $2760!

Now, simply by adding Regal-Trace, you get all the advantages of tracer lathe production with your present LeBlond Regal and Dual Drive Lathes. Easy, fast, accurate—Regal-Trace gives your lathe low cost duplication of parts for high production turning. Prices begin as low as $2760 for the 13" Regal model.

Easy to use—Operates from easily prepared flat templates. Traces radii, stepped shafts, contoured faces, tapers, compound and spherical curves. Simple to set up. Can be installed in less than 15 minutes. Self-contained—only 4 major parts, all mounted on lathe. Hydraulic unit becomes an integral part of the machine (does not interfere with normal lathe operation). Tracer unit quickly replaces compound rest.

Fast and accurate—Locked-circuit hydraulic system produces exceptional responsiveness and precision. Regal-Trace will consistently duplicate part after part to accuracy of ± .0005". Feed rate of 75" per minute keeps up with speediest cuts. Fits any LeBlond Regal built since 1955, and all Dual Drives. Regal-Trace is the ideal lathe attachment for tool room or production turning. See your LeBlond Distributor or write today for complete information. Ask for Regal-Trace Bulletin.

... cut with confidence

The R. K. LeBlond Machine Tool Company
Cincinnati 8, Ohio

world's largest builder of a complete line of lathes for more than 72 years

LeBLOND of Cincinnati

India Wants U. S. Technology

Trade Mission Reports Good Opportunities

India's program of industrialization needs help, in capital, tools and technical skills.

Trade Mission reports long-term profit opportunities for U. S. businessmen who take the plunge.—By E. J. Egan, Jr.

▪ A host of opportunities to participate in India's expanding economy beckon to American metalworking companies.

Handsome long-term profits await U. S. businessmen who will send some money, machines, and skilled manpower to this budding industrial nation.

Competition for Europe — But the opportunities won't last forever. Private capital from Europe is moving in at a fast clip.

These findings come from a team of seven American businessmen who recently finished a nine-week Trade Mission to India for the U. S. Dept. of Commerce. The group toured 14 cities over there and talked to almost 4000 Indian business executives. Here are some highlights from the report.

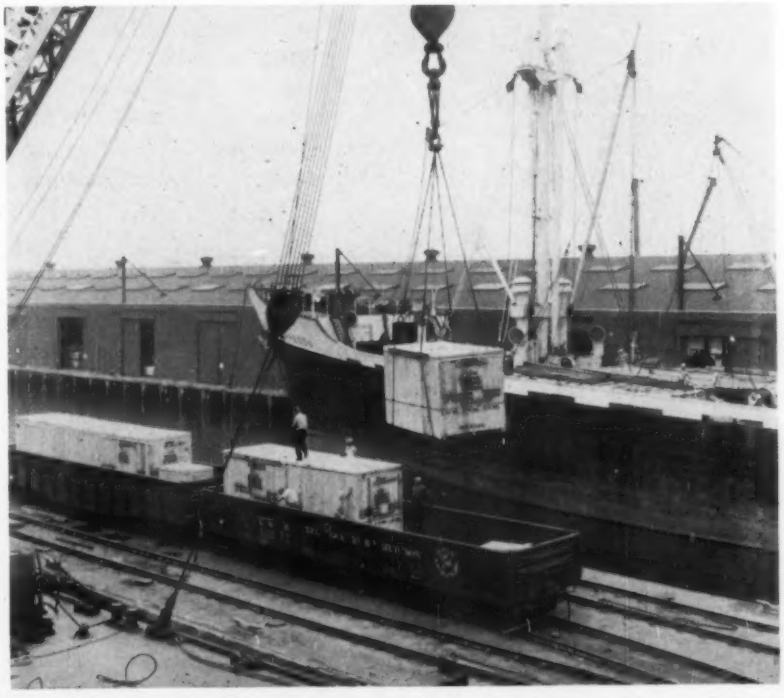
Industrialization a Must—India's growing economy must have industrialization on a whopping scale. Here is a nation of 380 million people "favorably disposed towards the U. S., eager to absorb American technology, and anxious to enlarge trade and financial relationships with the U. S."

The size of this market, plus the existence of responsible Indian companies anxious to link up with U. S. businesses, should attract a lot of American capital, machinery and technical assistance. Manufacturing licensing agreements would be ideal ways to apply such help. India needs to make everything you can think of, from shoe eyelets to shapers.

More to Come—As manufacturing plants start to grow, other opportunities follow. A tool and die industry will develop, of course. Aggressive tool engineers from the U. S. could find pleasure and profit in getting it started. Subcontracting, too, will offer limitless profit possibilities for Americans with the money and machinery to set up job shops.

The Indian Government indicates it will give American investors priority if they want to help the nation attain its industrial-expansion goals.

U. S. Saws Sail for South Africa



PREFER U. S. DESIGN: Overseas markets for U. S. machine tools have shrunk some, but they're still important and can be built up again.

No less a customer than Demag Aktiengesellschaft, a leading German builder of steel mills and mill machinery, bought this shipment of six metal cutting saws made by Kling Bros. Engineering Works, Chicago.

These machines, valued at more than $100,000, were specified for their high-speed features. Destination: a new Demag-built rolling mill in South Africa. It's the first European-designed mill to use Kling Bros. equipment.

INDUSTRIAL BRIEFS

Alco Gets AEC Contract—Alco Products, Inc., has been awarded an Atomic Energy Commission contract for final design and fabrication of a sodium-to-sodium heat exchanger and a sodium-to-water steam generator. The contract, awarded by the Chicago Operations Office of the AEC, is valued at $1.5 million.

L & N Wins—Leeds & Northrup Co., Philadelphia, has received contracts in excess of $50,000 from Ohio Steel Co. for temperature recording and controlling equipment on 17 furnaces at its forging plant in Lima, O.

Official Dedication—Dedication of Lear Incorporated's new $5 million instrument manufacturing facility in Grand Rapids, Mich., is scheduled for Sept. 25th. Construction of the plant, where 2,200 employees are already at work, was started in May '59, on a Lear-owned 48-acre site adjacent to Grand Rapid's Kent County Airport.

Hats Off to "Hard Hats" — The Institute of Scrap Iron & Steel Inc., national association for the iron and steel industry, has established an annual Safety Week in the scrap industry. It will be held this year during the week of Oct. 19. The theme will be "Hard Hats."

Bearings for Brazil — Johnson Bronze Co. has formed the Johnson Bronze do Brasil with manufacturing facilities in Rio de Janeiro. The new company results from a joining of a subsidiary, Johnson Bronze International, Inc., with the partners of SinteRosa Auto Pecas, Ltda. It will produce sleeve bearings for the automotive industry in Brazil.

Seek Key to Solid Solutions—A fundamental research program into the nature of metallic solid solutions will be undertaken by Union Carbide Metals Co., Div. of Union Carbide Corp., in cooperation with the Atomic Energy Commission. The study will involve basic experimental areas in electron transport, X-ray diffraction and nuclear magnetic resonance.

Wide Span—Inland Steel Products Co., Milwaukee, is introducing a new, T-Steel Roof Deck as a result of the purchase of the T-Steel Corp., Kirkland, Wash. The new product permits the designer to work economically with clear roof spans up to 32 ft and combines structural roof and ceiling in one product.

Plastic Pipe Plant—Glamorgan Pipe & Foundry Co., Lynchburg, Va., has created a new Plastics Div. to manufacture and sell rigid polyvinyl chloride pipe. A new extrusion plant to produce the PVC pipe has been constructed at the Glamorgan properties in Lynchburg and will be on stream in late August.

Joint Effort — A new welding machine will make thin gauge materials easier to weld. The shielded inert gas arc welder differs from the conventional DC welder by furnishing AC and DC welding current. The trailer-mounted and gasoline driven engine is result of work by the U. S. Army Engineer Research & Development Laboratories, Fort Belvoir, Va. and the Miller Electric Co., Appleton, Wis.

"You don't need a raise. You're too absent-minded to drive a car, too intelligent to want television, and too preoccupied to hear your wife complain."

Foote Moves Forward — Foote Mineral Co., Philadelphia, will build a $2.2 million research and engineering building near Exton, Pa. It will house the firm's Research and Development Dept., Central Engineering Dept. and will provide administrative offices for the Production Dept.

Cool Crucible—Mallory-Sharon Metals Corp., Niles, O., has been awarded a contract by the Air Materials Command at Wright-Patterson Air Force Base, Dayton, O., to build a prototype cold mold crucible for induction melting. The contract calls for construction and testing of a 14″ diameter induction furnace with a water cooled crucible for melting reactive metals.

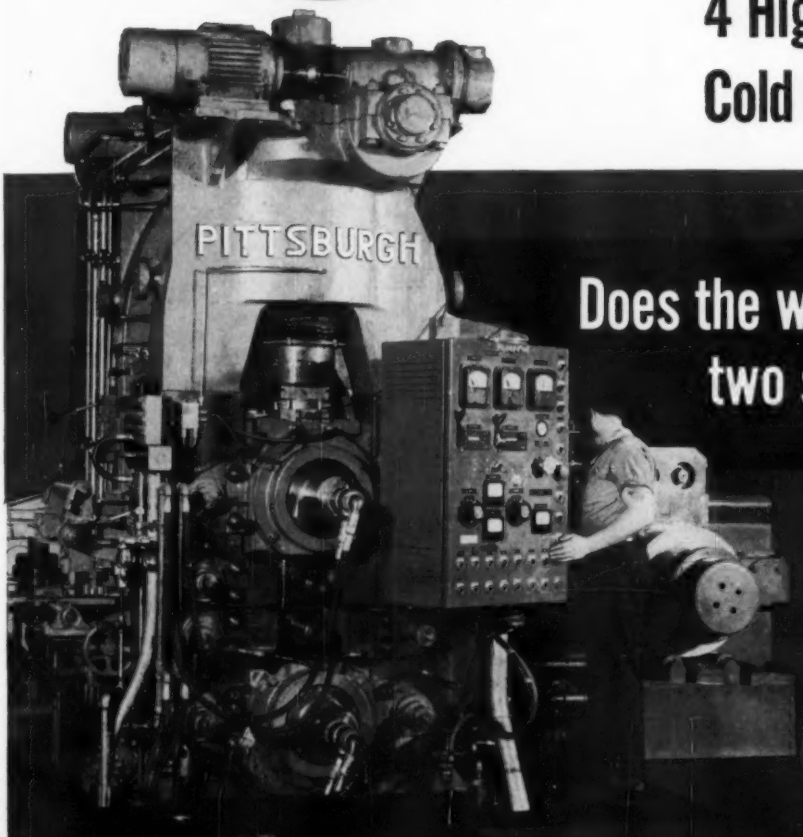
Happy Anniversary — Approximately 1,500 suppliers and customers recently helped the Geo. R. Borrmann Steel Co., Oakland, Calif., mark its 40th year as a steel service center. George Borrmann, who opened the first steel warehouse in Oakland in 1919, still heads the firm as president.

Best Seller—The "Alcoa Structural Handbook" is back on the presses. Between 1930 and 1958, it sold 188,500 copies. An initial 40,000 copies of a new (the sixth) revision are now on their way, making a total of almost 230,000 copies printed to date. The new edition is available from Aluminum Co. of America sales offices, or from 789 Alcoa Bldg., Pittsburgh.

Oxygen for California—Air Reduction Pacific Co. will build a new 30 ton per day air separation plant in Richmond, Calif. The plant, designed to produce liquid oxygen, nitrogen and argon, will serve the San Francisco-Oakland area and outlying districts. The unit is scheduled for completion by late 1959.

PITTSBURGH

Combination 4 High/2 High Cold Mill . . .



Does the work of two separate mills

"Precision" and "Versatility" are the words that best describe the new combination 2 High/4 High Cold Mill designed and built by PITTSBURGH to secure precision gauge, temper and finish for the ferrous and non-ferrous industries. As a 4 High Mill, it is used for cold reducing; as a 2 High Mill, it is used to acquire the desired temper and finish. Several desirable design features are incorporated to keep roll change time to a minimum. Low initial cost and economical operation are attractive plus values.

"Electric and open hearth steel castings from 1 lb. to 100 tons"

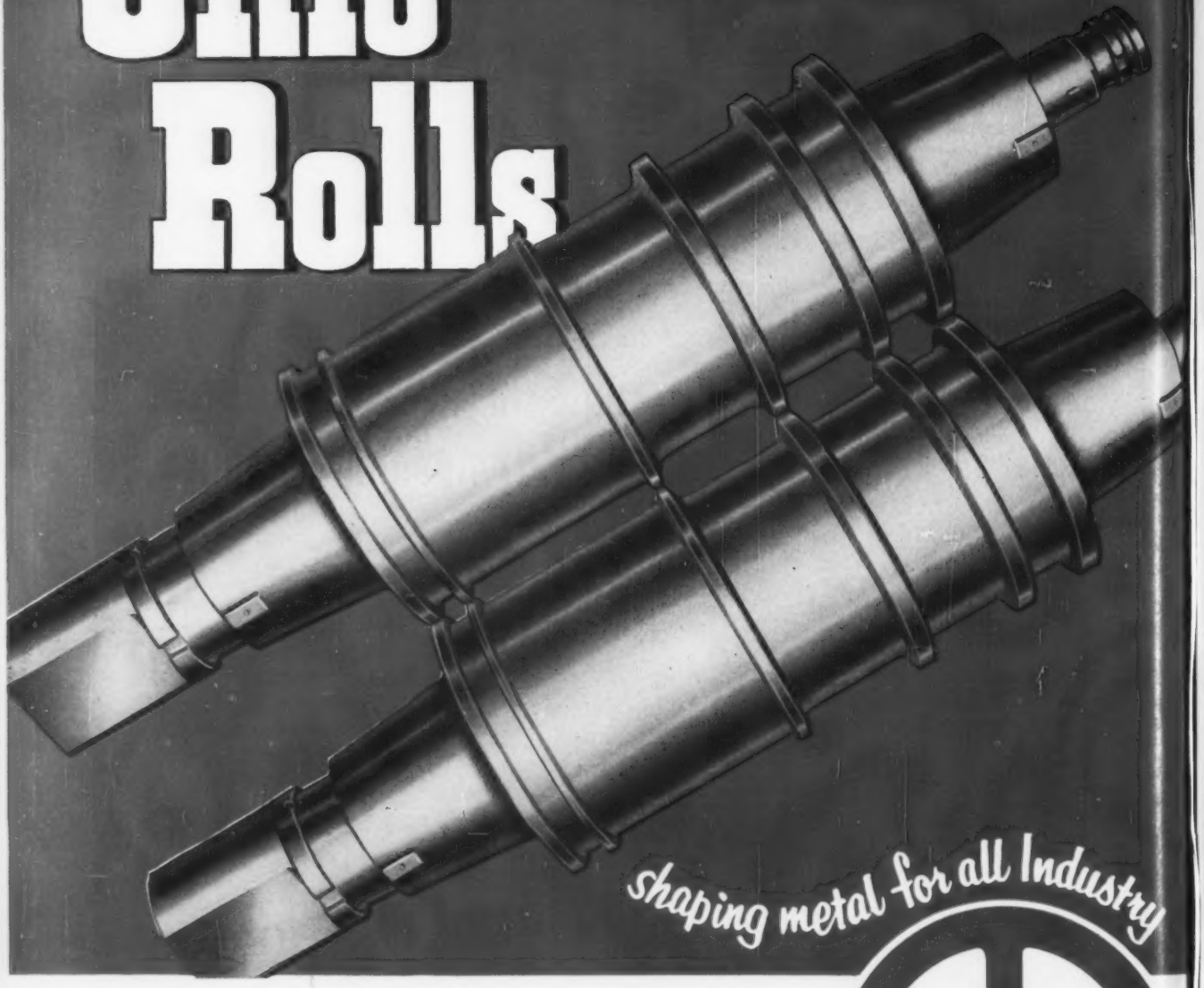
HEAVY MACHINING FACILITIES

Our plant is equipped with a superior complement of well diversified machine tools that are available on a continuing basis for economical machining of heavy castings or the manufacture of auxiliary rolling mill equipment, such as heavy mill tables, furnace pushers, slab depilers, downcoilers, ingot buggies, slab transfers, etc.

PITTSBURGH
ENGINEERING & MACHINE DIVISION
Pittsburgh Steel Foundry Company
TEXTRON, INC.

BOX R, GLASSPORT, PENNSYLVANIA • PLANTS AT GLASSPORT & McKEESPORT, PA.

Ohio Rolls



shaping metal for all Industry

OHIO IRON AND STEEL ROLLS

Carbon Steel Rolls
Ohioloy Rolls
Ohioloy "K" Rolls
Nioloy Rolls
Flintuff Rolls
Double-Pour Rolls
Chilled Iron Rolls
Forged Steel Rolls
Denso Iron Rolls
Nickel Grain Rolls
Special Iron Rolls

The Ohio Steel Foundry Co.

LIMA, OHIO

LIMA... Virtually at the center of the steel industry

PLANTS AT LIMA AND SPRINGFIELD, OHIO

R. S. Poister, elected vice president, research and development, Salem-Brosius, Inc.

Russell, Burdsall & Ward Bolt & Nut Co., Western Div.—**J. M. Bell,** named asst. vice president, sales.

Syntron Co.—**B. K. Hartman,** appointed vice president and general manager.

Phoenix Steel Corp. — **F. S. Thompson,** appointed director, purchases.

Link-Belt Co.—**R. G. Bottorf,** appointed sales manager, Colmar (Pa.) plant.

The American Brass Co.—**J. N. Allen,** appointed asst. sales manager, Kenosha (Wis.) Div.; **T. G. Hamilton,** named district sales manager, Cedar Rapids office.

Pittsburgh Plate Glass Co., Paint Div.—**G. J. Berghoff,** appointed vice president.

Jones & Laughlin Steel Corp.—**J. T. Smiley,** appointed asst. manager, Tubular Products.

Armstrong Bros. Tool Co.—**T. P. Sawyer,** appointed sales manager, Chicago.

Linde Co.—**C. R. Castor,** appointed sales manager, Crystal Products.

Pangborn Corp.—**J. E. Bevan** is now foundry metallurgist.

U. S. Steel Corp., American Bridge Div.—**L. J. Larison,** appointed manager, operations.

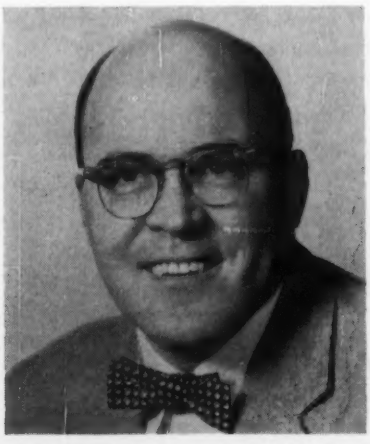
Screw & Bolt Corp. of America —**C. E. Zettel,** appointed manager, sales, New York district.

Kaiser Aluminum & Chemical Sales, Inc.—**H. L. Pease,** appointed sales manager, consumer foil products.

Borg - Warner Corp., Ingersoll Kalamazoo Div.—**F. T. Cameron,** appointed manufacturing manager.

SKF Industries, Inc.—**D. B. Eden,** appointed director, distributor sales.

J. K. Parks, appointed general manager, Detinning Div., Metal & Thermit Corp., New York.



J. J. Conroy, appointed director, industrial relations, Alan Wood Steel Co., Conshohocken, Pa.

W. B. Bishop, named vice president, sales, Basic Inc., Cleveland.

Consolidated Electrodynamics Corp.—**Dr. C. F. Robinson,** appointed an associate director, research.

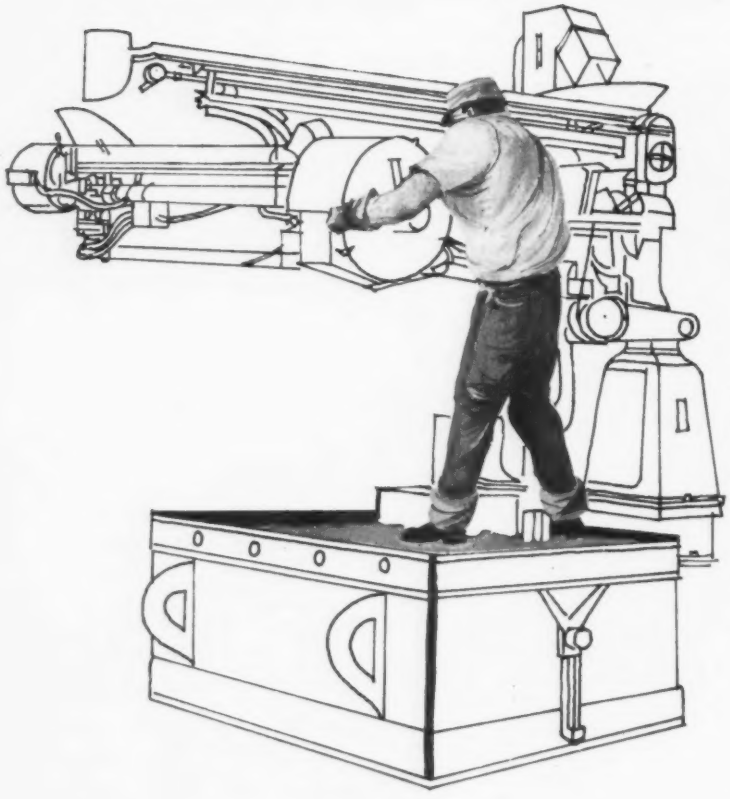
Controls Co. of America—**H. B. Wilgus,** named general sales manager, automotive and air conditioning sales.

Kaiser Aluminum & Chemical Sales, Inc., Electrical Conductor Div.—**R. J. Harrison,** appointed division market sales manager; **E. K. Matteson,** appointed manager, util-

(Continued on P. 74)

W. R. Mogg, appointed general manager, Spring Div., Crucible Steel Co. of America.

men, metal and machines



SERVICE FOUNDRY

Men who know metal . . . design engineers, pattern makers, skilled foundrymen, metallurgists. *Metal* . . . all types, including high alloy, corrosion-resistant stainless steel. *Machines* . . . a full complement of production facilities, type and capacities to handle all standard as well as unusual work. Steel castings to 16,000 lbs.—non-ferrous to 2,500 lbs. These are the elements that guarantee superior castings—the only kind produced by SERVICE FOUNDRY.

Write for our complete brochure, *Foundry Work—Steels, Alloys & Non-Ferrous*

VERSATILE BUILDER ON THE MISSISSIPPI

AVONDALE
MARINE WAYS, INC.
Service Foundry DIVISION
416 ERATO ST. • JAckson 2-3836 • NEW ORLEANS 13, U.S.A.

(Continued from P. 73)

ny sales; **J. C. Johnson,** appointed manager, industrial sales; **J. A. Leuver,** north central regional manager; and **R. L. Kuemmerlein,** Kansas City regional manager.

E. K. Sandbach, named manager, Foreign Sales Dept., Engineering and Construction Div., Koppers Co., Inc.

Armco Drainage & Metal Products, Inc.—**Herbert Clark, Jr.,** appointed Indiana states sales manager.

The Clark Controller Co.—**G. J. Deutsch,** appointed manager, Chicago district office; **H. H. Riesmeyer,** appointed manager, Gary, Ind., branch office.

Consolidated Electrodynamics Corp., Analytical & Control Instrument Div.—**Dr. C. E. Berry,** appointed director, engineering.

OBITUARIES

Alfred Kauffmann, 79, former president and a director, Link-Belt Co.

W. W. Ege, director and vice president, Copperweld Steel Co.

E. L. Cheyney, 81, retired, Aluminum Co. of America.

E. R. Hanson, 62, president, Stanley-Humason, Inc., Forestville, Conn., a subsidiary of The Stanley Works.

F. G. Sutphen, research consultant, Armco Steel Corp.

SAVING TIME ON THE LINE

ONLY

Sems

PERMIT HOPPER-FED DRIVING OF LOCK WASHER AND SCREW!

There's an opportunity for real production-time savings in Sems. They're pre-assembled to eliminate handling of separate lock washers and screws on the assembly line . . . can be applied with a hopper-fed screwdriver for extra man-hour economies. Broad selection of types and sizes available. Inquire today.

36 Sources
conveniently located
for fast service

AMERICAN SCREW COMPANY
Willimantic, Connecticut

ANCHOR PRODUCTS, INC.
Cleveland 5, Ohio
Waterbury 20, Connecticut

THE BLAKE & JOHNSON CO.
Waterville 14, Connecticut

BUTCHER & HART MFG. CO.
Altoona, Pennsylvania

CENTRAL SCREW COMPANY
Chicago 9, Illinois
Keene, New Hampshire
Frankfort, Kentucky

CONTINENTAL SCREW CO.
New Bedford, Massachusetts

EATON MANUFACTURING CO., RELIANCE DIVISION
Massillon, Ohio

ECONOMY SCREW CORP.
Chicago 14, Illinois

ELCO TOOL & SCREW CORP.
Rockford, Illinois

FEDERAL SCREW WORKS
Detroit 10, Michigan

GREAT LAKES SCREW CORP.
Chicago 27, Illinois

H. M. HARPER CO.
Morton Grove, Illinois

HARVEY HUBBELL, INC.
Bridgeport 2, Connecticut

INDIANA METAL PRODUCTS DIVISION, TEXTRON IND., INC.
Rochester, Indiana

KENTUCKY SCREW CO.
Louisville, Kentucky

LAKE ERIE SCREW CORP.
Cleveland 7, Ohio

THE LAMSON & SESSIONS CO.
Cleveland 9, Ohio

MIDLAND SCREW CORP.
Chicago 32, Illinois

NATIONAL LOCK COMPANY
Rockford, Illinois

THE NATIONAL SCREW & MFG. CO.
Cleveland 4, Ohio
Los Angeles 22, California

PARKER-KALON DIVISION, GENERAL AMERICAN TRANSPORTATION CORP.
Clifton, New Jersey

PHEOLL MANUFACTURING CO.
Chicago 50, Illinois

PROGRESSIVE MFG. CO., DIV. OF TORRINGTON CO.
Torrington, Connecticut

REPUBLIC STEEL CORP. BOLT & NUT DIVISION
Cleveland 13, Ohio

RING SCREW WORKS
Van Dyke, Michigan

ROCKFORD SCREW PRODUCTS CO.
Rockford, Illinois

RUSSELL, BURDSALL & WARD BOLT & NUT CO.
Port Chester, New York
Los Angeles 33, California
Rock Falls, Illinois

SCOVILL MANUFACTURING CO. WATERVILLE DIVISION
Waterville 48, Connecticut

SCREW & BOLT CORP. OF AMERICA
Pittsburgh 30, Pennsylvania

SEMS DIVISION, TEXTRON INDUSTRIES, INC.
Rockford, Illinois

SHAKEPROOF DIVISION, ILLINOIS TOOL WORKS
Elgin, Illinois

SOUTHINGTON HARDWARE DIV. SCREW & BOLT CORP. OF AMERICA
Southington, Connecticut

THOMPSON-BREMER & CO.
Chicago 22, Illinois

TRIPLEX SCREW CO.
Cleveland 9, Ohio

UNITED SCREW & BOLT CORP.
Chicago 8, Illinois

WALES-BEECH CORP.
Rockford, Illinois

●

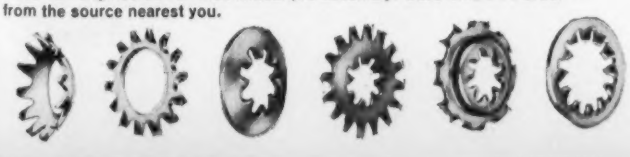
For information on SEMS sources in Canada contact:

CANADA ILLINOIS TOOLS LTD. SHAKEPROOF/FASTEX DIVISION
Don Mills, Ontario, Canada

FOR GREATER PRODUCT DEPENDABILITY

Specify SHAKEPROOF® LOCK WASHERS on Sems

Each Shakeproof Lock Washer is especially designed to insure a firm grip in a specific type of application. They come in a wide variety of styles and sizes—all engineered for mechanical pre-assembly. Save time . . . order from the source nearest you.



Sems

pre-assembled screw and lock washer

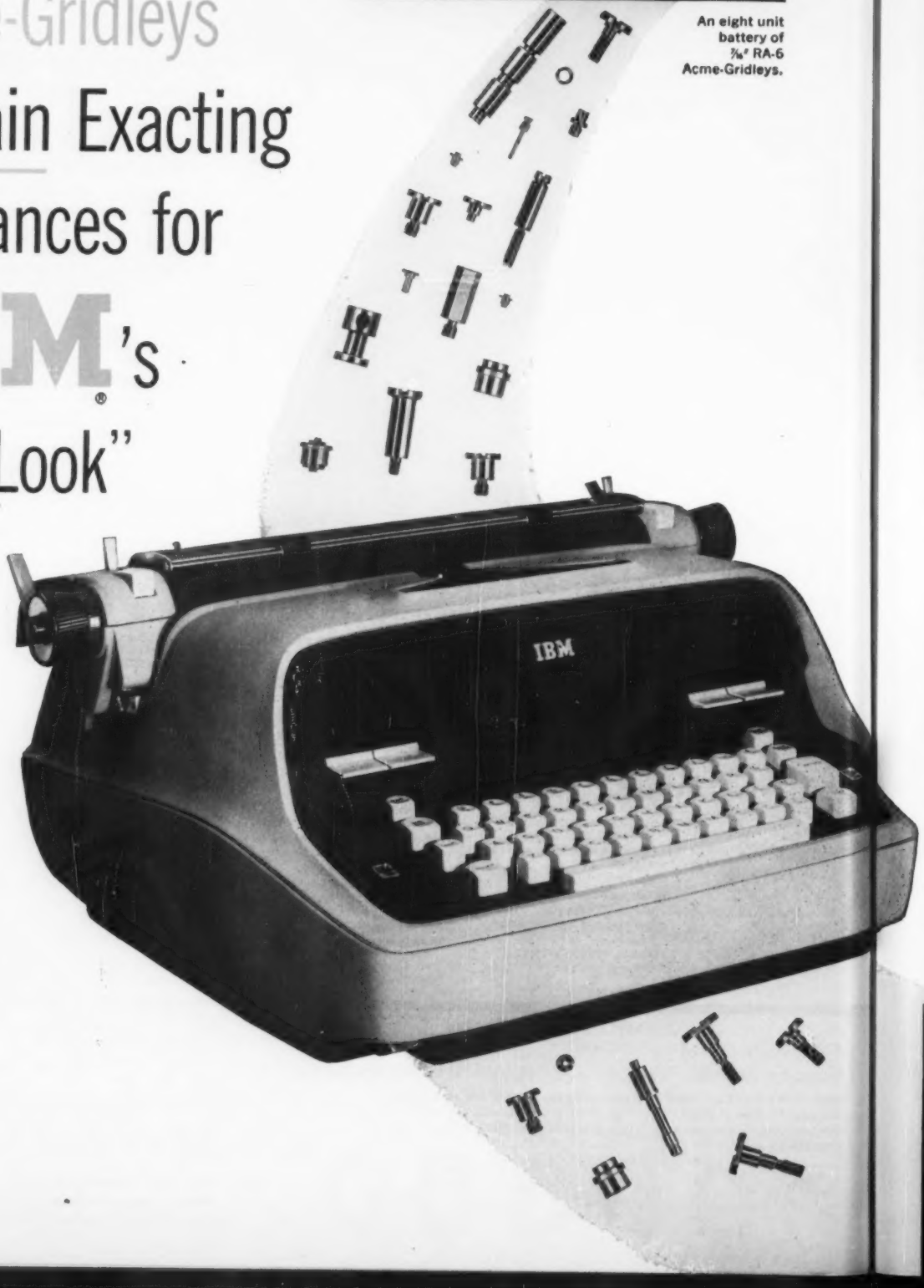
SEMS is a development of Illinois Tool Works, Chicago

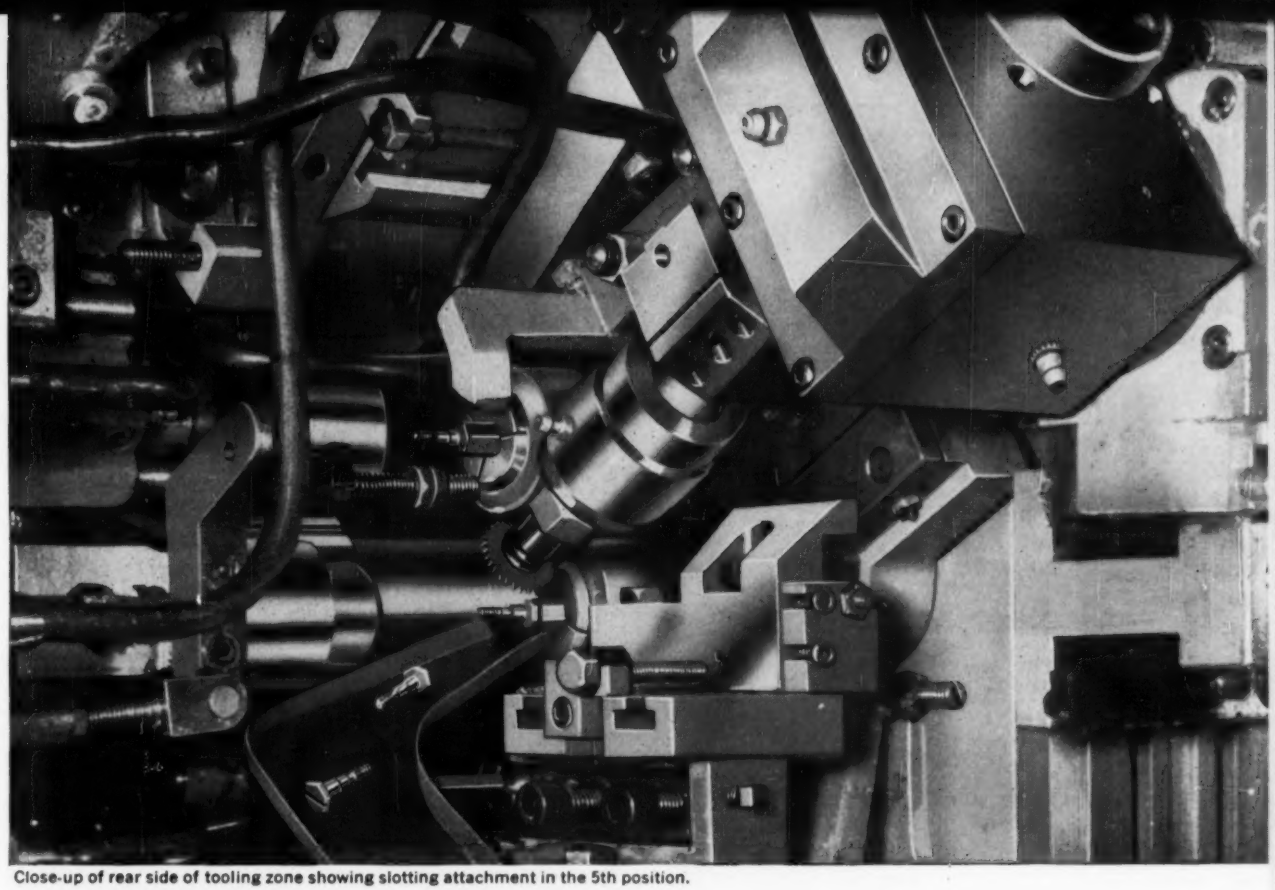
iTW

First Precision Component
in the Run . . . or Last

Acme-Gridleys Sustain Exacting Tolerances for IBM®'s "New Look"

An eight unit battery of ⅞" RA-6 Acme-Gridleys.





Close-up of rear side of tooling zone showing slotting attachment in the 5th position.

At IBM's modern Lexington, Kentucky plant, twenty Acme-Gridley 7/16" six spindle automatics are mass-producing the small to miniature parts for their sleek new electric typewriter. They help to provide IBM with greater *sustained* accuracy at lower cost than other comparable machines.

The precision components are held to closely controlled tolerances of .0005 t.i.r. These limits apply to the last piece in the run as well as the first, and consistent accuracy is maintained with less machine adjustment than ever before realized. Sustaining the closely controlled tolerances of these parts completely minimizes costly rejections during exhaustive quality control checks of the completed units. Inspection time is greatly reduced.

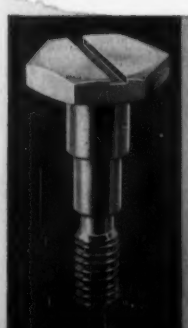
IBM has also found that the wide-open tooling zone of their 7/16" Acme-Gridleys permits much greater latitude in tooling up for complicated operations performed in a single set-up. This, plus the lasting accuracy of direct camming and the flexibility of independently operated toolslides, makes this newest member of the Acme-Gridley family a profitable asset to IBM's modern production line. Write for Bulletin MRA-58.

Pioneer in Circumferential Automation

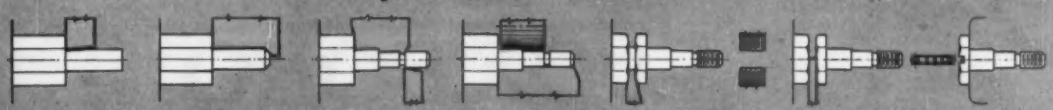
National Acme

The National Acme Company
175 E. 131st Street
Cleveland 8, Ohio

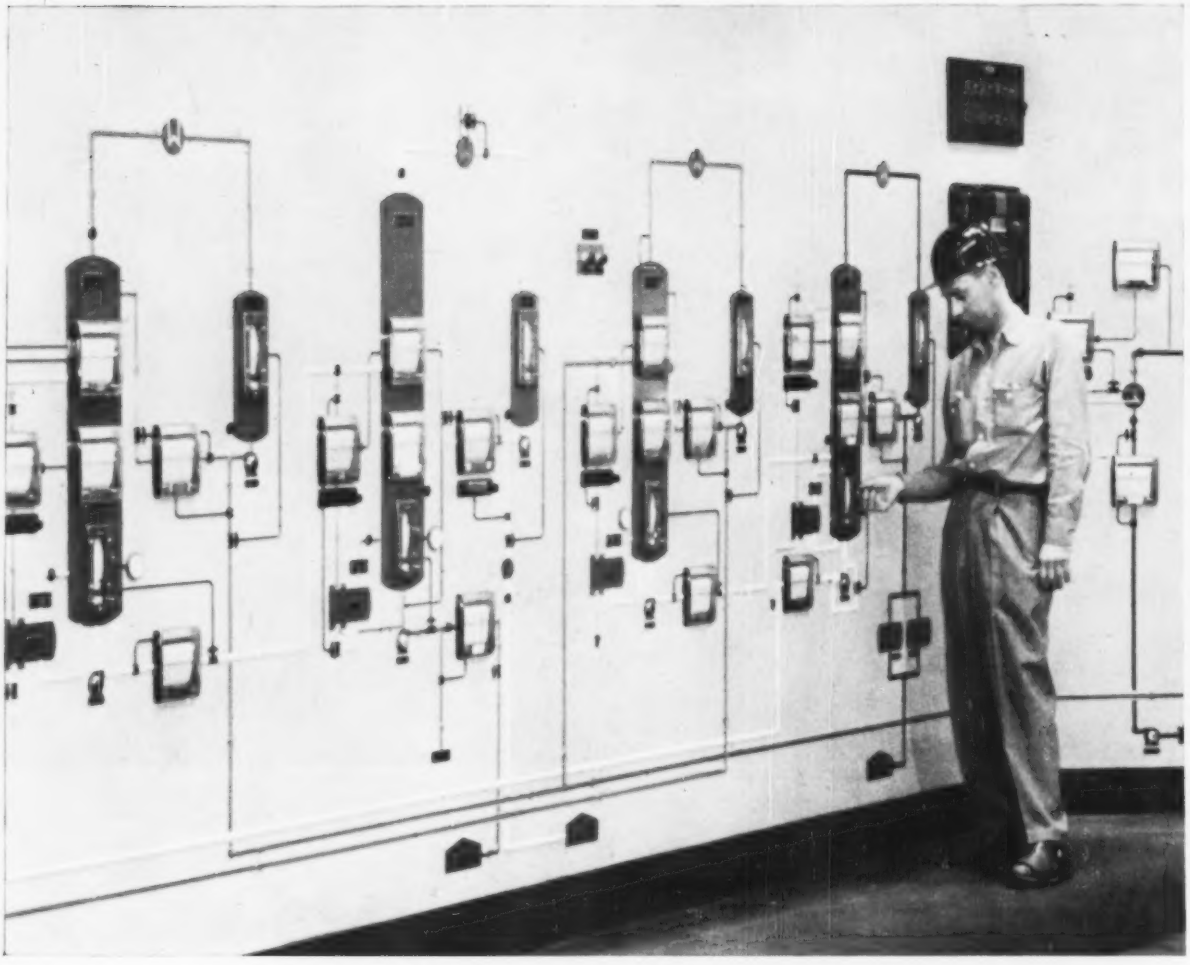
Sales Offices: Newark 2, N.J.; Chicago 6, Ill.; Detroit 27, Mich.



9 Operations in 4.9 Seconds



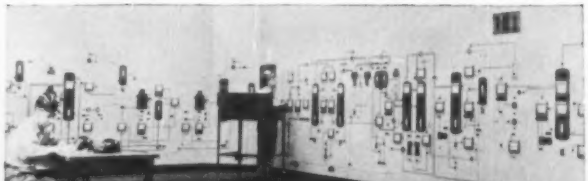
6. Rough Turn Front End
1. Rough Form and Chamfer Front End
2. Finish Form Two Diameters Finish Turn Thread Diameter
3. Shave Three Diameters
4. Breakdown for Cutoff-Thread
5. Cutoff-Pickup and Slot



Foxboro Consotrols* "easy on maintenance" at U. S. Steel's Gary Works

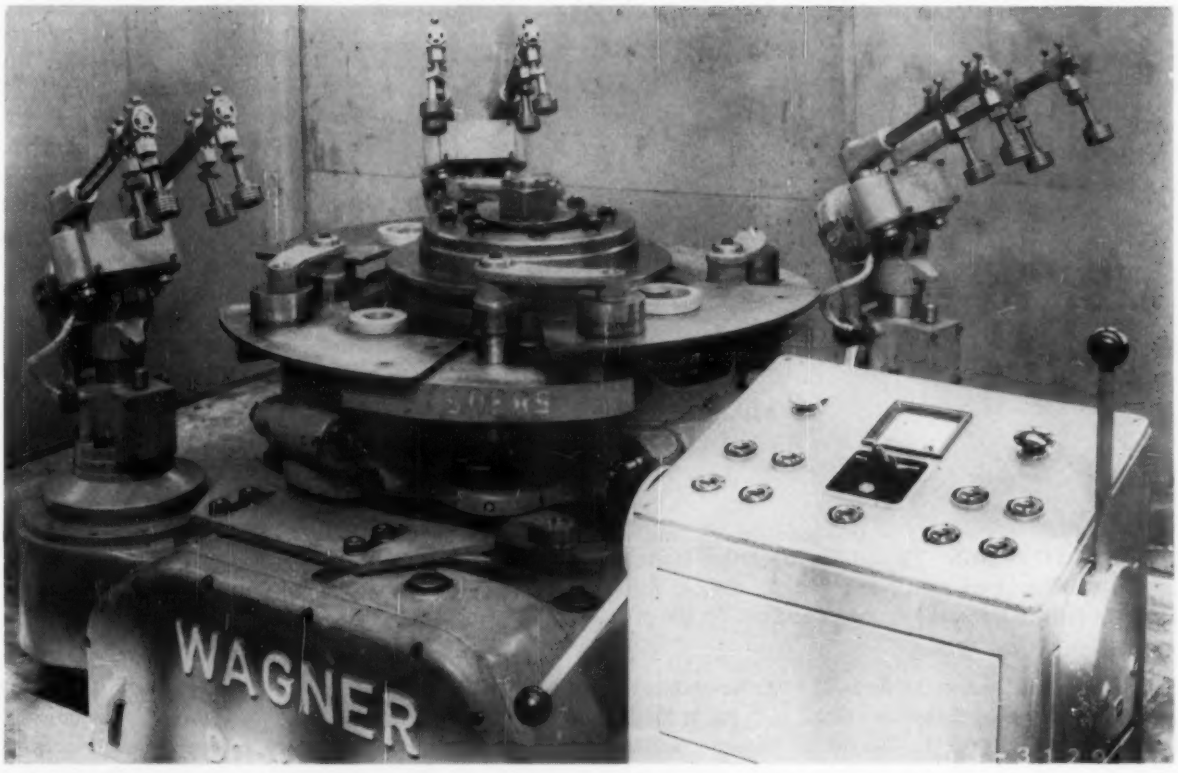
Foxboro Consotrol Instruments have been in service 5 years at U. S. Steel's Gary Works, yet only a few have ever needed calibration. In fact, Gary Works reports that many of the Foxboro M/58 Controllers have never even had their covers off.

Low maintenance is just part of the Foxboro Consotrol story. Sustained high accuracy, precise repeatability, a full range of control functions — you get them all when you specify Consotrol instrumentation. Get full details in Bulletin 13-18, or call your nearby Foxboro field engineer. **The Foxboro Company, 808 Neponset Ave., Foxboro, Mass.**



83 foot graphic control panel for Gary Works Light Tar Distillation Plant was built by Foxboro in 1954. 250 Consotrol instruments record and control all temperature, pressure, flow and liquid level variables. *Consulting Engineers:* United Engineers and Constructors, Inc., Philadelphia. *Reg. U.S. Pat. Off.

FOXBORO
REG. U.S. PAT. OFF.



PARIS MODEL: Race-rolling mill for Paris exhibit has dual-groove profile roll for roughing and finishing, bearing races in the same cycle. Mechanical "fingers" load, transfer, and unload races at proper times.

Line Rolls Precision Rings From Low-Cost Billets

For years, many bearing races and other ring forms have been machined from tubing. Now, an automated line will roll them from inexpensive billet blanks.

▪ Here's a preview of a fully automatic production line that hot forges and roll-forms hundreds of precision metal rings per hour from inexpensive billet blanks.

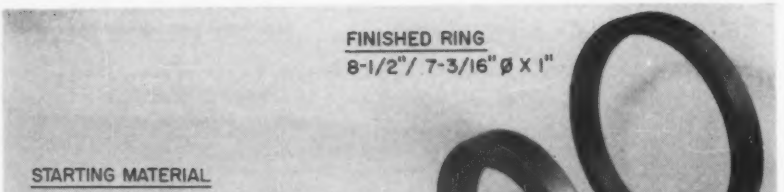
Built by Wagner & Co., Dortmund, Germany, the setup is especially designed to produce ball and roller bearing races, spring rings, ring gear blanks, and the like. Key units of a typical line will be operating at the 6th European Machine Tool Exhibition in Paris next month, actually rolling 450 bearing races hourly for shipment to a German factory.

Should Interest Visitors — Wagner's U. S. sales agency, Girard Associates, of Chambersburg, Pa., expects keen interest in the Paris display. And there is good reason for this optimism; Wagner has five complete race-rolling lines on its order books, including two placed by American bearing makers for delivery next year.

Will rolling eventually become the standard technique for producing bearing races and other precision ring forms? Wagner and Girard engineers believe so.

They point to the common practice of machining races from alloy steel tubing, using batteries of multiple-spindle automatic machines. In the U. S., such tubing costs about 28 cents per lb.

Billets Cost Less—In contrast to this, the Wagner technique uses the



BILLETS TO RINGS: Typical line operation starts with a 4.63-lb square or round billet blank (left), ends with a 4.41-lb finish-rolled ring (right). Only waste is in the small slug punched out on the press.

same alloy grade, but in the form of square, non-annealed billets that cost about 13 cents per lb. The billets are simply notched and broken into sections. These sections are hot forged into ring blanks and then roll-expanded into races of uniform size, weight, and volume.

Billets cut the bearing maker's cost in other ways, too. The rolling process actually makes use of 94 to 96 pct of the billet metal. The only waste is a small slug that's punched out of each billet section in the ring-forging press.

On the other hand, the user of tubing can't buy it in diameters and wall-thickness sizes to match every size of bearing race he produces. Sometimes, as much as 50 pct of the tubing ends up in the form of chips.

Saves Work—The new ring-rolling line also saves manpower. Because it's fully automatic, there's no need for more than two operators: one at the billet breaker, and another for the rest of the line.

As still another benefit of the ring-rolling process, engineers point to the superior metallurgical structure of finished workpieces. Forging and rolling induces better mechanical properties, they say, and rings and races are less apt to distort in subsequent heat treating cycles.

Break Billet First—On a fully-integrated rolling line, the first station is the billet notcher and breaker. Next in line is a scale which automatically rejects broken sections of billet if they are over or under a preset weight range.

Billet sections which pass this weight check move automatically into a space-saving induction heating furnace. Its clean, quick cycle heats the sections uniformly while keeping scale and decarburization to a minimum.

Press Forges Rings—Hot blanks from the furnace shuttle forward

Forging Press Makes Ring Blanks

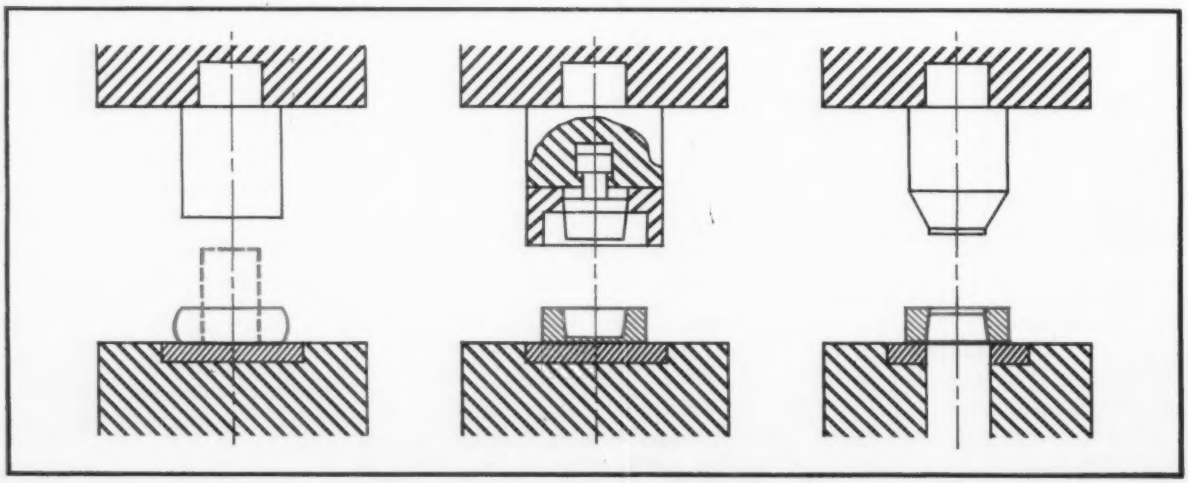


FIG. 1: In the automatic hot-forging press, Station 1 upsets the hot billet blank; Station 2 preforms a ring blank, keeping excess metal in the center web; Station 3 punches the web from the overturned blank.

How Rings are Rolled

into a transfer-type forging press. In quick succession, as Fig. 1 shows, three work stations on the press transform these billet sections into ring blanks for the final rolling operation.

The first press station upsets the billet section to create a flat blank. Next, a closed die surrounds the blank and a punch expands the blank into the die cavity. Hydraulic cushioning limits the downward movement of the punch when the cavity is filled.

Thus the volume of metal in the peripheral section of each blank is always the same predetermined amount. Any excess metal is confined to the center web section.

Burr-Free Piercing—A transfer device between the second and third press stations flops the preformed blank over so the piercing punch in the third station will not leave a burr outside the ring as it knocks out the center web.

Thus each stroke of the forging press produces a ring blank of uniform size and weight. A chute leading from the press discharges these blanks to a table where mechanical fingers pick up one at a time for loading on the ring-rolling mill.

Fig. 2 is a plan view sketch of the rolling mill's basic elements and actions. To simplify the drawing, the loading, unloading and work-transfer fingers are not shown.

Choice of Profiles—A solid king shaft in the center of the mill supports a profile roll. This roll produces the desired contour on the OD of the finished ring. Typical profiles rolled by means of this quick-change tool setup include straight, tapered, grooved, and dished forms.

A large hollow shaft surrounds the king shaft to provide support for a flat turntable. As Fig. 2 shows, the turntable rotates around a different axis than the king shaft and profile roll. The turntable also mounts four internal mandrel rolls which carry the ring blanks through the forming cycle.

Other key parts of the mill are (1) four guide rolls that pivot around fixed points on the turntable, and (2) a curved template bar which the guide rolls follow as the turntable revolves.

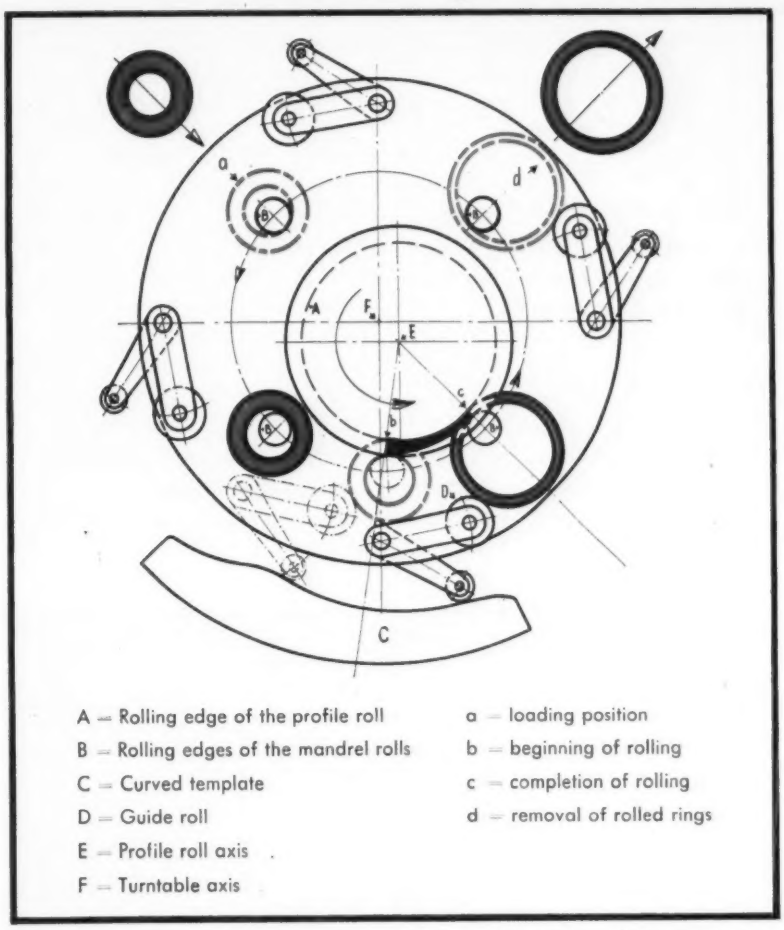

A — Rolling edge of the profile roll
B — Rolling edges of the mandrel rolls
C — Curved template
D — Guide roll
E — Profile roll axis
F — Turntable axis
a — loading position
b — beginning of rolling
c — completion of rolling
d — removal of rolled rings

FIG. 2: Action of automatic mill produces a steady flow of close-tolerance ring forms. Thorough working yields excellent structure and properties.

Uses Eccentric Motion—Because of the eccentric relationship between the axes of the profile roll and the turntable, each internal mandrel roll passes two extreme positions in relation to the profile roll every time the turntable revolves. One is a maximum-distance (loading and unloading) position; the other is a minimum distance from the profile roll.

Actual ring forming takes place as the distance between a mandrel roll and the profile roll begins to shrink. Forming is complete at the point where a mandrel roll and the profile roll are the minimum distance apart. Unloading fingers then come in to pick up the finished ring.

As each ring is being formed, a guide roll works in conjunction with the curved template bar to maintain true roundness in the workpiece.

Automated ring-rolling lines, as represented by the equipment to be shown in Paris, are able to produce rings from 2 in. ID to 22 in. OD.

Reprints of this article are available as long as the supply lasts. Write Reader Service Dept., The IRON AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.

Quality Control Program Gages Production of Consumer Goods

This down-to-earth program in a powermower plant looks at the final product from the customer's viewpoint.

By R. H. Eshelman,
Engineering Editor

▪ High-speed production of consumer goods requires a practical program of quality control. And you can reap these benefits without getting involved in the depths of mathematics and statistics.

At least that's the word from Moto-Mower, Inc., a division of Detroit Harvester, in Richmond, Ind. The company's successful plan is geared to handle the manufacture of reel and rotary lawnmowers, 71 different models in all.

Close to 8000 various parts are used in the making of these lawnmowers. This year it expects to produce about 300,000 units for three distinct markets. They include a mail order house, its own retail dealer setup and special distributors.

In this competitive field both quality and price are important. Much of this company's success is due to a strict control of product quality on a plant-wide basis. And it's done even though the Indiana company has outgrown its facilities. Expansion is in the cards.

OPTICAL GAGING: Moto-Mower's quality control section checks gear teeth against template with enlarged projection.

Qualify Vendor Shipments—According to Gene Bowers, Plant Superintendent, the place to begin in controlling part quality is back in your receiving area. Like many consumer goods manufacturers, Moto-Mower buys many finished components and parts as well as castings, forgings, and other semi-finished blanks and raw materials.

Inspection checks and okays all shipments before they're released to production. The gamut runs from bolts and gears to mower decks and engines.

But the extent of checking varies with type of part, past experience and supplier and engineering requirements. For instance, Chief Inspector Gus Rabde explains, "We usually make a sample check on bolts, about 100 per thousand . . . less with larger pieces."

Master Plan for Engines—There's a different procedure for engines. As with all parts, from either company, production or supplier, sample parts are submitted to central engineering in Detroit for approval before they're officially released. With engines, however, a control master which checks engineering specs goes to plant inspection in Richmond. A duplicate goes back to the supplier.

After an engine is approved by the company's central engineering group, with any major engineering change, such as in governing speed settings, new part samples must be submitted. The old ones are returned to the vendor to be destroyed.

When you're buying engines six months in advance of requirements, you must keep them current. This master engine plan is one way to do it.

Dimensional Control — Another major part is the rotary mower deck which goes on the largest volume of production. These decks may be stampings or aluminum castings. One riding model uses what is believed to be the largest single-piece, thin wall permanent mold casting made in this country.

Once such a part is qualified, many of the dimensions won't change. Only critical points are inspected. Routine production checks call for laying out a couple of decks from each pallet.

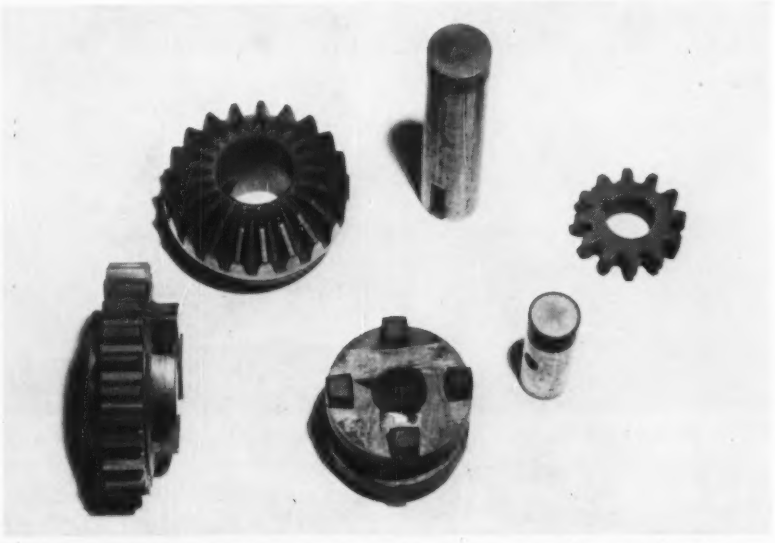
This calls for blueing in the deck, setting up on surface plate and measuring from base lines with height gages and angle plates. Such jobs may take 4 to 24 hours.

Watch Problem Areas — Other critical production areas are watched carefully for deviations from standard. These include tolerances on rotary blades and reels, forming and machining of decks to eliminate burrs and avoid draw marks or anything on the surface harmful to paint finish.

Inspection checks sample reel blades for twist and hardness, plus hole sizes to see that they aren't changing. On rotary blades floor inspection makes hourly checks at the blanking press for balance, then again at grinding and finally right after hub assembly.

This process of accurate sizing and punching the blades in a press, followed by a tolerance check, eliminates the danger of blade vibration. Also this type of quality control, built into production, saves time and costly balancing operations.

ALL ALUMINUM: Large, permanent mold deck on surface plate is checked by inspector for hole locations and other critical points.



GEAR CHECK: Gears and shafts used in mowers receive complete inspection, including section tests for case penetration and effective depth, case and core hardness and decarburizations.

Close Check on Gears—This approach—building quality into production—pays off in gear parts too. As in any mechanical equipment, these can be the most troublesome to hold. To keep these up to par the company's engineers dipped into both automotive and aircraft practice.

First, all steels used in gears are certified by the supplier for chemical composition. In the carbon-restoration type of heat treatment, the vendor uses a system of records and controls to furnish a permanent graphic record of each shipment. Then about 10 pct of the gears from each heat are tested nondestructively for case hardness by sectioning.

Further, all gears are checked for engagement, lead error, adden-

dum and dedendum. The inspection department keeps the record from each supplier over a period of time, plotting gear histograms on a master chart. The performance rating goes to the purchasing department for its guidance in the future.

Finish is Important—As with any consumer product, finish is vital. Since a rather large variety of materials, from plastics, steels to new light metals, goes into mowers, the problem is one of finding color matches to meet showroom inspection.

The industry demands uniform coverage and high finish for sales appeal. So the plant uses high-luster enamels applied by the electro-static process.

Preparation of parts includes caustic washing to remove any grease or processing compounds. Then parts run through a three-stage phosphate wash, which improves the bond. A high-temperature rinse and air blast leave the parts hot when they enter the paint booth.

Baking after painting toughens the finish and adds to knock-resistance. Requirements call for a 200-hour salt spray test, six months fading exposure under Florida sun, and hot and cold shock tests.

FINE BALANCE: Roving inspector checks rotary blade for balance with ball-bearing fixture and 1½-g magnetic weight.

DIFFERENT VIEW: Consumer inspector always discusses findings with final assembly inspection supervisor. This irons out any production kinks.

Consumer Authority — All the tests and inspections have one final authority in mind—the consumer. In fact, the company has set up a consumer inspector at the end of the line. His job is in addition to in-process inspection. From the shipping line he removes mowers at random after they've been approved.

He then takes the mower to the consumer test area, unpacks it, sets it up and looks over the instructions, parts and components as a buyer would do. In his job he maintains an impartial viewpoint.

The fact that production troubles may have forced engineering and plant inspection to use certain parts with minor deviations does not affect him. He gases up the unit, oils it per directions and runs it.

Then he reports any item, no matter how minor, which he feels might not please the consumer. These reports go to management, engineering, inspection and production. This inspector averages at least one unit per shift from each line in operation.

Engineering Tests—In addition, engineering has set up even more stringent tests using similar procedures. Again, this procedure calls for setting up and running the mower. It goes a step further, by checking parts and components against specifications. But these inspections are far less frequent.

After the inspector completes his examination the unit goes back to the shipping dock, with any needed alterations. But a printed note is included in the carton telling the purchaser the special attention his unit has received.

FASTER THAN MANUAL: The ⅜-in. tool completes the job in less than half the old manual time.

FREES WIRES: Vibration winds burnt wires around the adapter. Then the taper permits easy removal.

Tool Eases Core Wire Removal

This new air tool removes burnt core wires as easily as free wires. And it's faster than two men can work manually.

▪ To solve a problem in removing reinforcing core wires from hollow castings, Forest City Foundries Co., Cleveland, swung to a ⅜-in. air-powered tool. This eliminated the old time-consuming method that required double handling whenever wires stuck to the casting.

Here was the problem. Various size core wires are inserted in sand cores for reinforcement. These same wires must be removed after the casting is poured, cooled and run through shake-out.

Two Men—It took a couple of men just to remove these wires with pliers. But worse yet, more than a minute was needed to remove the wire from a typical casting.

Whenever the reinforcing wire is close to the core's surface, the wire tends to adhere, or burn, to the casting. When that happens, the burnt wire can't be removed by pliers. This means that castings must be rejected and set aside for salvage.

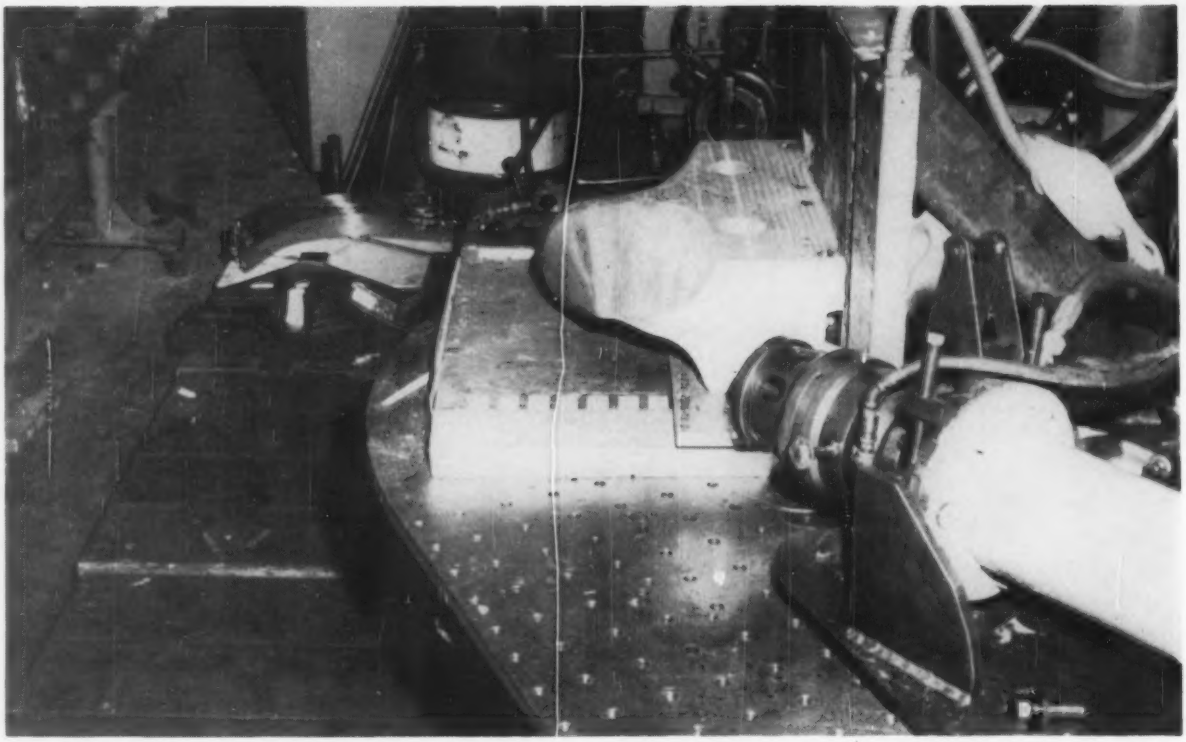
Tool for the Job—A ⅜-in. capacity, air-powered Impactool, made by Ingersoll-Rand, New York, solves the problem when used with a special adapter.

A 3/16-in. slot is cut in the end of an anvil extension. The slot adapter is then placed over the exposed end of the core wire. When the tool's turned on, the wire is coiled around the adapter and pulled from the core of the casting.

Faster and Cleaner — Results were satisfactory, even though these wires were brittle. Too much tension causes the wire to break rather than pull free. But the I-R Impactool winds the wire tight. Then repeated high-frequency impacts vibrate the wire free from the wall of the casting.

A survey reveals the effectiveness of the operation. A group of castings with burnt wires were returned from the salvage pile. And the tool removed every single burnt wire.

The time study on one casting shows 70 seconds by hand but only 30 seconds with the Impactool. Also, the tool eliminates double handling of burnt-wire castings, removing them as easily as free wires.



DIE HOLDS UP: Die, plated with Pyro-Plate nickel, has performed stretch-forming operations at 1000°F for 1000 hours. No signs of oxidation as would be indicated by peeling or cracking have been noticed.

Plate Life Into Your Dies

New Process Cuts Down Premature Failures

Hot-work die wear has long been a problem for many fabricators.

One solution is a thermally bonded nickel or tungsten plate, inexpensive and easy to apply.

▪ Rapid deterioration of hot-work dies has long been a major concern to fabrication experts. The advent of the exotic, high-temperature, high-strength alloys, and the problems associated with the working of these metals have made the die situation even more acute.

There are perhaps more hot-work dies than realized if one considers the uses to which they are put. Actual applications include heavy forging, hot heading, press forming, stretch-forming, hot drawing, die casting and extrusion.

Many Die Varieties—The variety of dies in each of these applications is influenced by the metal being formed, the size of the part, the length of the production run, and the severity of the forming operation.

In the course of these operations, whereby dies are used to form heated metals or to heat metals to be formed, they are exposed to temperatures ranging from 500°-1200°F.

What then are some of the criteria for dies? Of what metals should they be made?

They should be made of materials that are cheap, good heat conductors, and easily machined and finished. Their surface should be oxidation resistant, hard enough to resist abrasion and, at the same time, ductile enough to permit flexing under impact.

Consideration of some of the causes of failure will assist in understanding the problems faced by the users of dies.

Why Dies Fail—One of the most prevalent causes of die failure is heat-checking. These microscopic cracks in the surface result from repeated expansion and contraction due to heating and cooling cycles. The formation of oxides in the exposed areas enlarges the cracks until flaking occurs.

Oxidation of the die surface itself is another problem for the oxides, whose formation is accelerated by heat, are most often abrasive particles which tend to flake from the surface.

Surface pitting, another common cause of die failure, can be caused by the corrosive effects of certain lubricants, or by the gouging action of the abrasive metal oxides or the metal to be formed.

Rugged Service—When one considers that hard abrasive particles, corrosive elements, and other destructive media are forced into the metal grain boundaries, or dragged over the die surface under many tons of pressure, it is remarkable that hot-work dies last as long as they do.

Attempts to overcome these shortcomings have taken many turns. Alloy die steels represent one extensive effort to attain a die surface which is hard, tough, and abrasion resistant.

Other efforts to extend die life include hard chrome and nickel plate, special coatings and lubricants, and carbide inserts and liners.

Yet, several West Coast fabricators are solving the problem of hot-work die wear by the use of a new, inexpensive plating process.

Increase Die Life—These recent procedures, Pyro-Plate metallurgical platings, developed by Todco, Whittier, Calif., have increased die life by at least 25 pct; in certain applications, die life has been prolonged better than 85 pct.

The first of these processes, Pyro-Plate nickel plate, covers the surface of any ferrous metal and infiltrates the base metal so that alloying between the plating material and the surface of the base metal takes place.

Bonded by heat, this plating cannot lift, peel, or crack, is ductile enough to allow some flexibility of the die surface, may be precipitation hardened to 65-68 Rc, and is highly resistant to both oxidation and corrosion.

Moreover, the nickel infiltrates the die substrate along the grain boundaries to provide maximum resistance to intergranular oxidation.

Check Results — Application of Pyro-Plate nickel to hot-work dies for Thermo-Form Co., Inc., Div. of Altamil Corp. of El Segundo, Calif. has shown outstanding results.

This company has developed new hot-forming methods for fabricating plate and sheet components of high-temperature, high-strength alloys for the aircraft and missile industries.

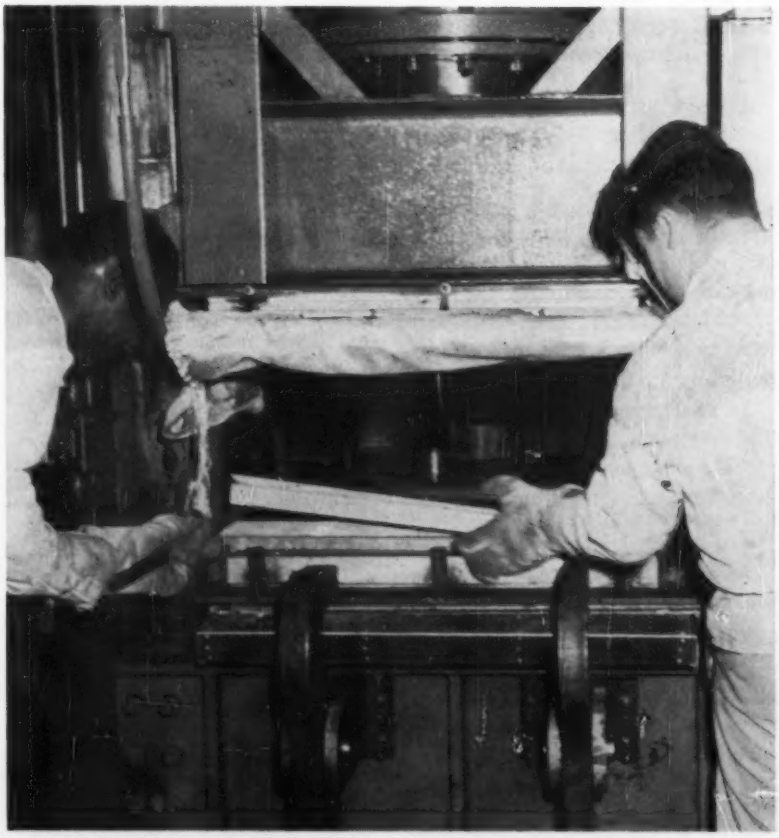
One method places the sheet metal between two electrically heated dies where, in one operation, it is deformed and the metal heated to reduce spring-back. Another method involves bringing the sheet to proper temperature between two electrically heated flat dies after which it is quickly removed and deformed to the desired shape.

Oxide Caused Reject—Thermo-Form's dies operate in the range of 700°-1200°F with the result that a black oxide layer is formed on the surface of most of the low alloy steel dies. This oxide flaked off, sometimes became embedded in the sheet and caused a reject.

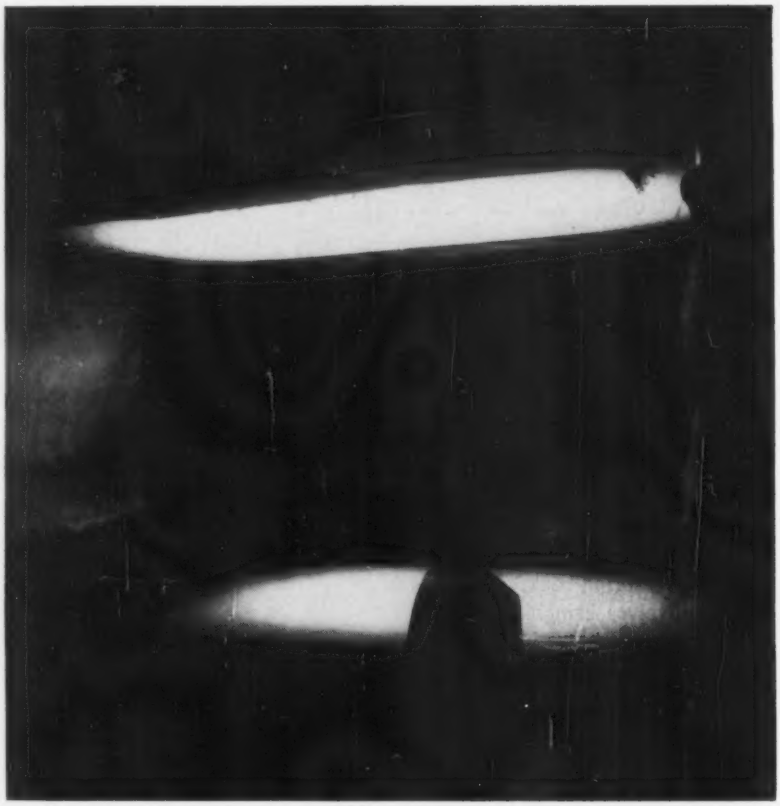
Removing the oxide by scraping the dies prior to forming each piece was discontinued when it was noted that the resulting rough die surface caused flaws in the finished parts.

It was decided not to fabricate the dies from oxidation resistant stainless steel because of the expense, the difficulty in machining the heating channels and intricate surface convolutions, and the lower heat transfer properties.

Dies of inexpensive, easily machined plow steel were plated with Pyro-Plate nickel. These steel dies operated for over 1000 hours at 1000°F with no indications of sur-



SHAPE EXOTIC ALLOYS: Electrically heated dies fabricate parts of Mag-Thorium at 700°F. Bond is ductile enough to allow flexibility.



BRING TO TEMPERATURE: Electrically heated flat dies bring sheet to temperature prior to forming. Plate on dies does not crack or peel.

face oxidation as indicated by scaling, flaking, peeling, or cracking.

Low Cost — Equally important, the cost of these low alloy steel dies and the Pyro-Plate nickel process are about one-fourth the cost of stainless steel dies; moreover, they exhibit improved heat transferability.

In another application, a related Todco process, Pyro-Tung tungsten carbide plate, has demonstrated still other properties for improving die life.

Abrasion Resistance—With this process, nickel alloy plates, containing up to 80 pct by weight of crystalline tungsten carbide are applied to the surface of ferrous metals to provide abrasion resistance which, Todco claims, is far superior to the best hardened steel.

"Although the Pyro-Tung plate is thin, 0.0005 to 0.003 in. thick, it may be precipitation hardened to 68-70 Rc and, when properly supported by a hardened substrate, it has shown exceptional ability to withstand impact as well as rubbing abrasion."

Southern Bolt and Screw Co., Montebello, Calif., manufacturers of special ferrous and non-ferrous bolts, heat their metal to approximately 1500°F before inserting into the die for heading.

Why Did It Fail?—Officials at the company discovered that heat and oxidation, and not abrasion alone, were a major consideration in the deterioration of the die surface.

This became apparent when it was noted that the portion of the die which clamped the heated metal while the head was being formed showed evidence of failure first.

In seeking a solution to this problem, gripper and trimmer dies for hot-heading bolts of 1-in. shank diameter were plated with Pyro-Tung tungsten carbide plate. The dies, of air-hardening alloy steel (AISI H-13), were plated by Todco and subsequently heat treated by standard procedures to harden the substrate to 53-58 Rc.

Southern Bolt and Screw asserts that life of the dies generally has been extended between 25 to 50 pct over that of unprocessed dies while, on surface wear alone, improvement of 50 pct is reported.

Improvement is attributed to the abrasion resistance offered by the tungsten carbide and to the oxidation resistance of the nickel in the Pyro-Tung plate.

Easily Applied — Applicable to many hundreds of other articles for an array of purposes, Pyro-Plate nickel and Pyro-Tung tungsten carbide plates are inexpensive and easily applied by heat processors or brazing establishments with conventional equipment.

Both Pyro-Plate nickel and Pyro-Tung are compositions of paint-like consistency which may be applied by brush, dip, or spray to ferrous metals. No special surface preparation other than degreasing, vapor or grit blasting to assure a completely clean substrate is required.

The articles, coated in the desired areas with the composition, are furnace heated in a reducing atmosphere to a minimum of 1650°F for the Pyro-Plate nickel and 2050°F for Pyro-Tung. Cooling to below 600°F in the atmosphere completes the plating process.

Follow-Up Treatment — Dies may be subsequently heat treated to produce a hardened substrate. The tungsten carbide plate may be ground where required and the nickel plate may be finished to a high lustre if polished die surfaces are specified.

Todco asserts that blind holes and interior cavities are readily plated; no hydrogen embrittlement occurs nor is there three dimensional change or any build up of consequence on sharp edges.

Chamfer and Ream in One Pass

Ford Reports Good Results from New Deburring Tool

At Dearborn, a deburring setup saves 65 pct on machining costs.

On differential cases, a new tool combines three steps in one.

▪ Spurring production at Ford's Sterling Township Plant is a special deburring tool made by Cogsdill Tool Products, Inc., Oak Park, Mich. This versatile device now permits Ford to machine 8000 differential cases per day.

The Cogsdill tool makes two hidden inside chamfers on all Ford, Mercury, Edsel, Thunderbird and Ford truck assemblies. In addition, it's used as a reamer on the same vehicles. And it's so successful that Ford's now running four machines on a two-shift basis to speed up assembly time.

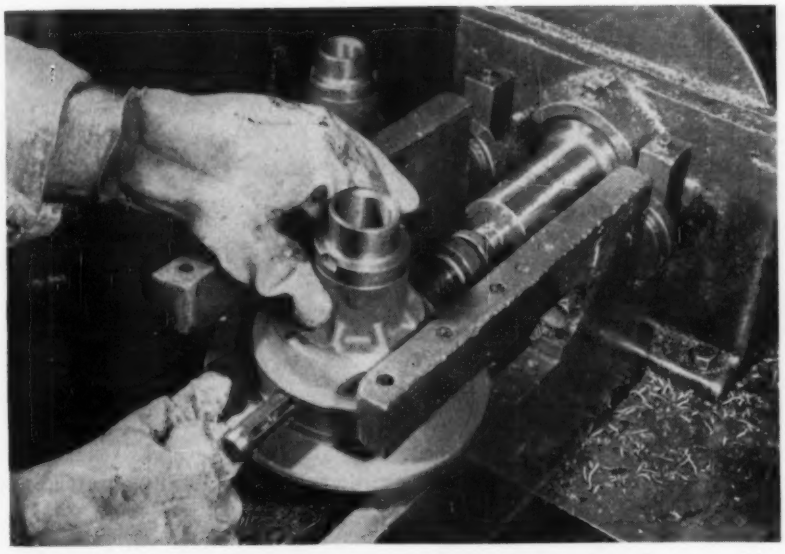
No Lost Motion—In a single pass, the tool reams the hole in the 0.750-in. entrance hole with an accuracy +0.001, 0.000 in. And at the same time, the implement makes two 0.045-in. inside chamfers at opposite ends of the differential case.

This has to be done for two reasons. First, the case and cover are joined beforehand, so chamfering must be done from outside the case. Secondly, a slave pin hole is drilled through the entrance hole requiring the burr removal.

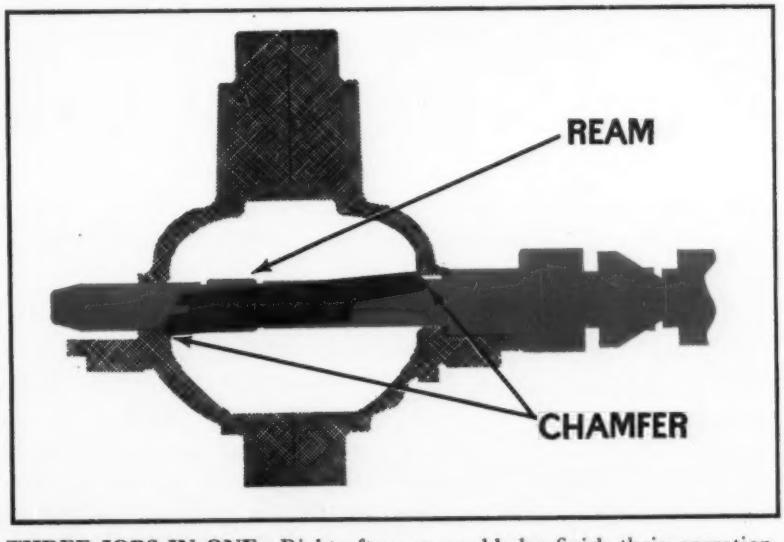
This setup replaces the old three-step operation. Under that system the back-chamfering tool did the job with case and cover separated. And another machine did the reaming.

Carbide Tips— But now four carbide-tipped reamer blades ream the hole. When the tool's shoulder presses against the edge of the case, a cam pin swings out a double-ended, carbide-tipped blade to chamfer both inside holes.

The Cogsdill tool is used on an Acar deburring setup that's driven by a ¼-hp motor turning at 850 rpm. The fixture guides the differential case into the tool. The operator then loads, completing the operation in one motion. Tool changes are made after a run of about 5000 plus differential cases.



ONE-PASS SETUP: Operator loads differential case into fixture guides for one-pass reaming and chamfering with special deburring tool.



THREE JOBS IN ONE: Right after reamer blades finish their operation, double-ended, carbide-tipped blade chamfers both inside holes.

DAILY REVIEW: A. K. Chambers (left), De Laval's Security Coordinator, reviews daily guard reports and clock tapes with Lt. S. Grodnicki. The Pinkerton agency relieves company of administration of guards.

Guard Service Handles Plant Security at Low Cost

By out-contracting the job, this plant finds it's getting more done under the heading of plant security.

The outside service also eliminates hidden costs and administrative headaches.

■ A company's review of the first year's operation of its plant security using guards of an outside agency reveals that it's an effective low-cost system. Before, the De Laval Steam Turbine Co., Trenton, N. J., had run its own uniformed guard service.

"Maybe it's enough to say that out-contracting our security service is saving us a substantial sum in regular payroll per year, plus a considerable amount in fringe benefits," says W. R. Reed, director of industrial relations, "but that would be telling only half the story."

Further advantages of the outside uniformed guard are tighter security, smoother operation and fewer administrative problems.

An Example to Go By—It all came about when he had the opportunity to observe a Pinkerton setup at a neighboring metalworking plant. This company had effected a sizable reduction in its security budget since turning its plant protection over to Pinkerton's National Detective Agency several years earlier.

He studied the setup, then called in Pinkerton's. The agency's survey of De Laval's security needs with its subsequent recommendations brought one immediate result.

De Laval had been operating its own plant security force with a total of 19 men putting in 760 guard hours a week. The Pinkerton setup that took over increases guard hours to 824 hours a week, but it's done with 15 men per day plus part timers to cover days off.

Broadens Protection — The result is reduction of total payroll cost and the elimination of fringe benefit costs. There are several reasons for this paradox.

For one thing, the agency guards work a six-day week of 48 hours, with a few part-timers coming in to cover swing periods. That accounts for the broader coverage in guard-hour protection.

The total cost is less because the outside agency can supply efficient manpower at going rates in the field, unaffected by plant-wide tenure, promotion and increases over the years.

Cuts Premium Pay—The agency pays its own guards straight time with no differential for nights, Sundays and holidays. Since plant security is an around-the-clock service, with emphasis on nights and holidays, De Laval had been paying out a sizeable sum in overtime and premium pay.

While the savings in fringe benefits are less readily computed, they're just as real. The company is relieved of the costs of old age benefits, unemployment insurance, pensions, hospitalization and workmen's compensation.

There's no problem of vacation and sickness pay or the costs of substitutes to cover absences. Now the company has no payroll costs, nor does it have the cost of recruitment, employment, training and turnover.

A Matter of Scheduling—With the company manned force, the supervising of even 15 or 20 uniformed guards—the security force went as high as 70 men during the war — was more time consuming than the affairs of many times that number of other employees. There was maintenance of schedules over the 24-hour day, seven days a week, a pattern easily interrupted by absences.

With Pinkerton's handling the job, the agency calls upon a reserve supply of trained guard material for filling a gap at a moment's notice. The company can forget vacations and vacation schedules—they are now the agency's worry.

With recruitment problems disposed of, so is the necessity for training new guards. The agency takes care of that.

Clear Responsibility—As in army protocol, the company official responsible for plant security clears all guard operations with a lieutenant in charge of the guard force. It's a way to transmit any criticism of guard operation or any suggestions for changes or replacement.

In the event of personality differences, the company's wishes need only be broached to the head of the guards, or to one of the security officers making periodic checks from the Pinkerton branch office, and a replacement is effected forthwith.

Then there's what management calls the "buddy-buddy" problem, difficult to control when the guard force is made up of plant employees. It may mean no worse than the winking at infringement of one or more company rules.

Check Discipline—But the company guard who will not stop a fellow worker from smoking in a forbidden area may become the guard who turns his back on pilferage, misuse of passes and carelessness producing fire and safety hazards. Disciplinary action in the case of a company guard force can grow into a labor dispute.

The guard hired from outside the plant makes no bones about reporting abuses and infractions of rules. It's the guard's job to report what he sees. Management can take over from there with whatever action seems best.

Improves Morale — Employee morale is actually strengthened in the knowledge that these guards are paid to protect the plant and its property. And most workers appreciate good housekeeping.

All five guard posts at De Laval are stationary posts during daytime working hours. The guard duties then are largely concerned with checking vehicles and personnel and handling traffic.

But from 3 pm to 7 am, and on Saturdays and Sundays, three of these posts become touring posts with hourly patrols. They average 25 clock stations per post.

PROFESSIONAL SECURITY: Guard checks an average of 70 non-company trucks that enter through this plant gate daily.

Adhesive Tightens Rail Joints

Commuters will welcome this improvement in rail travel.

It's a new compound that takes away the clickety-clack at rail joints.

▪ A special adhesive has been developed to give added strength and smoother riding qualities to railroad tracks. Designed to eliminate the battering effects absorbed by conventionally-bolted rails, the new compound prevents rail joints from expanding and contracting whenever they're exposed to hot and cold climates.

The adhesive, called Bondarc, is a product of Armstrong Cork Co.'s Industrial Div., Lancaster, Pa. Two-year tests on railroads in the United States and Canada indicate excellent performance under the constant churn of high-speed trains.

Bondarc is a thermosetting adhesive that can be mixed right on the spot. Although it cures faster with heat from a propane source, it can cure at atmospheric temperature.

Easy to Apply—Before bonding, place the joint bars on the top of the rails to be bonded. Then envelop the rail ends and bars with heat up to about 200° to 250°F. The proper time to make the bond occurs when the temperature reaches an equilibrium of 150° to 180°F. This happens soon after the heating element's been removed.

The adhesive can now be spread by hand on the bearing surfaces. Its gap-filling properties permit the molten plastic to flow right into the uneven surfaces. As the compound freezes the joints immobile, it also keeps them from opening up, thus providing a smooth butt joint between rails.

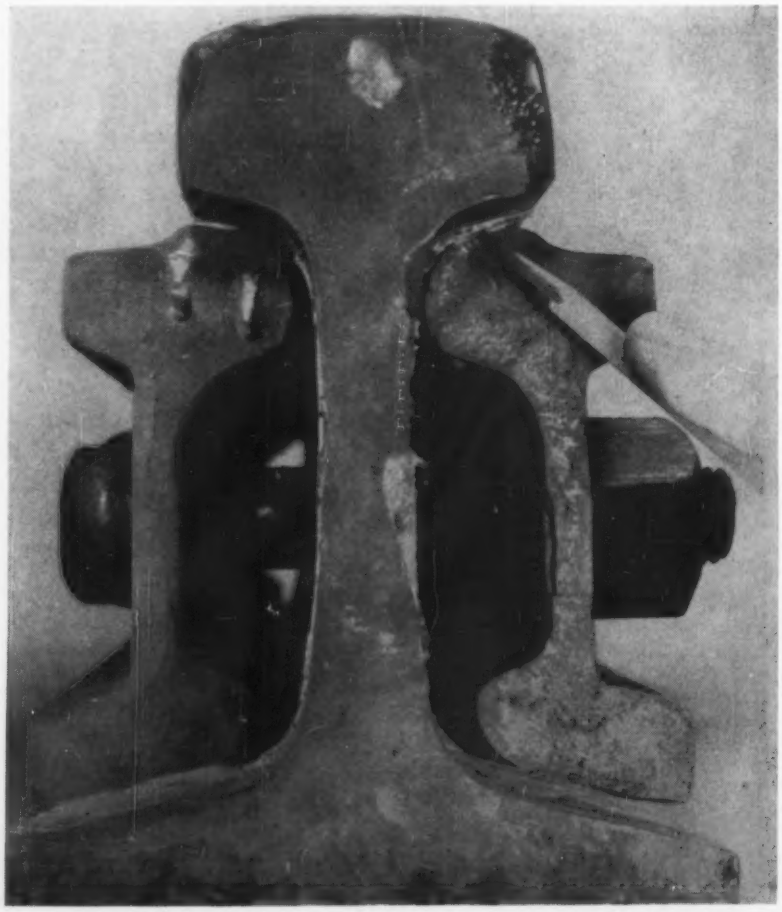
Finally, the parts are assembled with the joint bars bolted together, one on each side of the rail. Within 30 minutes the joint cures enough to hold the joint immobile. And it attains ultimate strength somewhere between 2½ and 4 hours.

Too Much Play — Conventionally-bolted joints don't get 100 pct contact with the tops and bottoms of the rail contours. These rails are connected by joint bars on each side of the rail. Then they're bolted together with two or three bolts on each rail end.

Since it's too costly to machine them to close tolerances, play develops as trains pass over. And this, combined with the damaging effects from the weather, results in uneven wearing surfaces. To correct this condition, rail ends must either be ground smooth or replaced entirely.

Slippage tests made with 132-lb rail joined with Bondarc show it has more than four times the tensile strength of an unbonded assembly. The adhesive displayed 250,000 psi tensile strength against 60,000 psi for an ordinary bolted joint.

When properly applied, the bond is expected to last many years. And that means less maintenance problems and freedom from the droning of the clickety-clack.



SOUND BOND: Adhesive bonds the joint bar to the rail. After cure, the joint is assembled in the usual manner with bolts.

Acme-Newport

ELECTRICAL SHEETS

PREDICTABILITY

Precise metallurgical control throughout every processing operation provides closely predictable characteristics in Acme-Newport silicon steels. Permeability and core loss properties consistently meet prescribed tolerances; sheets are unvarying in gage, punch fast and clean, assemble easily and economically. These known qualities thus enable manufacturers of electrical equipment to select the grades most economical for any application.

At Acme-Newport you benefit from over 40 years' specialized service in electrical steels, plus the integrated modern facilities of a basic steel producer. Would you like to discuss your requirements with our metallurgists?

Acme-Newport Steel COMPANY

NEWPORT, KENTUCKY

SUBSIDIARY OF ACME STEEL COMPANY

PRODUCTS OF ACME-NEWPORT STEEL

Hot Rolled Steel in Coil
Hot Rolled Pickled Steel in Coil
Hot Rolled Sheets
Hot Rolled Pickled Sheets
Cold Rolled Steel in Coil (*full hard only*)
Cold Rolled Sheets
Alloy Sheets and Plates
Plates (3/16" *and lighter*)
Electrical Sheets
Electric Weld Line Pipe
Spiral Welded Pipe

Is your plant CRITICALLY SHORT of WATER?

You will make major water savings, reduce your costs, solve your problems of water supply or disposal and get HIGH OPERATIONAL EFFICIENCY with Niagara "Aero" Evaporative Heat Exchangers, After Coolers or Condensers for these important plant services or processes:

- AFTER COOLING and air drying for large air and gas compressors and AIR LIQUEFACTION
- COOLING ENGINES, COMPRESSORS, HYDRAULIC PRESSES
- COOLING QUENCH BATHS, FURNACES, INERT ATMOSPHERES
- COOLING ROLLS, WELDERS, DRAWING OR EXTRUSION DIES
- PRODUCT AND PROCESS COOLING CHEMICALS OR INTERMEDIATES
- COOLING LIQUIDS OR GASES IN CLOSED SYSTEMS
- VAPOR CONDENSING UNDER VACUUM
- ELECTRONIC PROCESS COOLING

High operational efficiency means: precise temperature for improved product and process quality control, heat removal at rate of input, simple operating conditions, real economy in upkeep, sustained full capacity.

Also it means cooling in a closed system with your product kept free from contamination or, when condensing, getting a pure condensate holding high quality in your product or material.

Niagara machines do the work of a cooling tower plus shell-and-tube coolers with a single machine that saves piping, water handling disposal and treatment expense and 95% of water consumed by contact cooling methods.

Write for Bulletin 129, 130, 132, 136R.

NIAGARA BLOWER COMPANY

Over 35 years of Service in Industrial Air Engineering

Dept. IA-8, 405 Lexington Avenue
NEW YORK 17, N. Y.

District Engineers in Principal Cities of U. S. and Canada

FREE TECHNICAL LITERATURE

New Catalogues And Bulletins

Money-saving products and services are described in the literature briefed here. For your copy just circle the number on the free postcard, p. 101.

Dial Indicator

Low-priced, a line of dial indicators is engineered for long life and resistance to wear and shock. They are described in a four-page brochure. (Federal Products Corp.)

For free copy circle No. 1 on postcard, p. 101

Epoxy-Enamel Stripper

A cold, chlorinated liquid stripper for epoxy enamels, water-dilutible up to 20 to 1, is described in literature. Present strippers must be used full-strength; consequently this product reduces stripping costs. Wrinkling the coating instead of dissolving it, it does not become contaminated and has long life. (Enthone, Inc.)

For free copy circle No. 2 on postcard, p. 101

Masking Aids

Masking aids of all types, for use before painting or plating, are illustrated in a six-page brochure. They include plastic and cardboard disks, die-cut masks, plugs, caps, and tape. (By-Buk Co.)

For free copy circle No. 3 on postcard, p. 101

Variable-Speed Pulleys

A bulletin describes variable-speed pulleys designed to eliminate freezing and sticking. Five sheaves are designed for 2, 3, 5, 10, and 15 hp. Power is transmitted from the stationary flange through a removable sleeve cap, keyed to the moving flange by torsionally resilient rubber keys. Rotational pumping action puts a film of oil on bearing surfaces. (T. B. Wood's Sons Co.)

For free copy circle No. 4 on postcard, p. 101

Force Ring Transducer

Literature describes a force ring transducer which can be used for measuring tension or compression loads, torque, weight, and other force quantities. It picks up loading magnitude and translates it into ring deflection and thence into an electrical output which can be recorded or indicated. (Morehouse Machine Co.)

For free copy circle No. 5 on postcard, p. 101

Wire Rope Products

Seven rope products are described in five four-page pamphlets. They are three types of wire rope, cable-laid slings, two types of sleeve fittings to make slings, and a brand of Manila oilfield rope. (Jones & Laughlin Steel Corp.)

For free copy circle No. 6 on postcard, p. 101

Die Blanks

Four new types of composite tool-steel die blanks for manufacturing piercing, blanking, and forming dies are described in a bulletin. They are full-clad, end-clad, center-clad, and side-clad types. They combine hardened tool steel and soft, easily machined backup plates.

Lengths to 120 in. are available. (Simonds Worden White Co.)
For free copy circle No. 7 on postcard, p. 101

Forklift Trucks

Electric-powered forklift trucks with capacities of 4000, 5000, and 6000 lb, and with a control system that permits accurate "inching" and fast acceleration, are described in a catalog page. (The Elwell-Parker Electric Co.)
For free copy circle No. 8 on postcard, p. 101

Ways and Gibs

A 16-page catalog covers steel and bronze ways, gibs, wear plates, die sections, flange slides, and heel and guide blocks. (The Ohio Knife Co.)
For free copy circle No. 9 on postcard, p. 101

Manganese in Cast Iron

A four-page brochure discusses the function of manganese in cast iron, Mn alloys for the melting furnace, Mn recovery, Mn alloys for ladle additions, and Mn recovery in the ladle. Forms of Mn and Mn alloys available for foundries are listed. (Ohio Ferro - Alloys Corp.)
For free copy circle No. 10 on postcard, p. 101

Abrasives in Rubber

Rubber - bonded abrasives for polishing and finishing, such as polishing wheels, sticks, and stones, are described and fully specified in a folder. (The Carborundum Co.)
For free copy circle No. 11 on postcard, p. 101

Shaped Tubing

Tubing in square, rectangle, elliptical, oval, and a variety of other cross-sections is illustrated and described in a data memorandum. (Superior Tube Co.)
For free copy circle No. 12 on postcard, p. 101

Edge Protector

A brochure describes an edge-protecting material of cushioned padding with wire reinforcement, that slips over edges up to ¾ in. thick, covering both sides, to give

Townsend Lockbolts now available in Stainless Steel for greater strength ...corrosion resistance

If you need extra strength in fastening your assembly—plus corrosion resistance—you can get both now with Townsend 18-8 stainless steel lockbolts.

The use of Townsend stainless lockbolts gives you greater flexibility of design and the values are highly uniform. There is no chance for human error in setting lockbolts. Men with no special training get strong, vibration-proof joints every time.

Townsend stainless lockbolts are vastly easier to install —for example, they eliminate the back breaking work of bucking stainless rivets which work-harden rapidly.

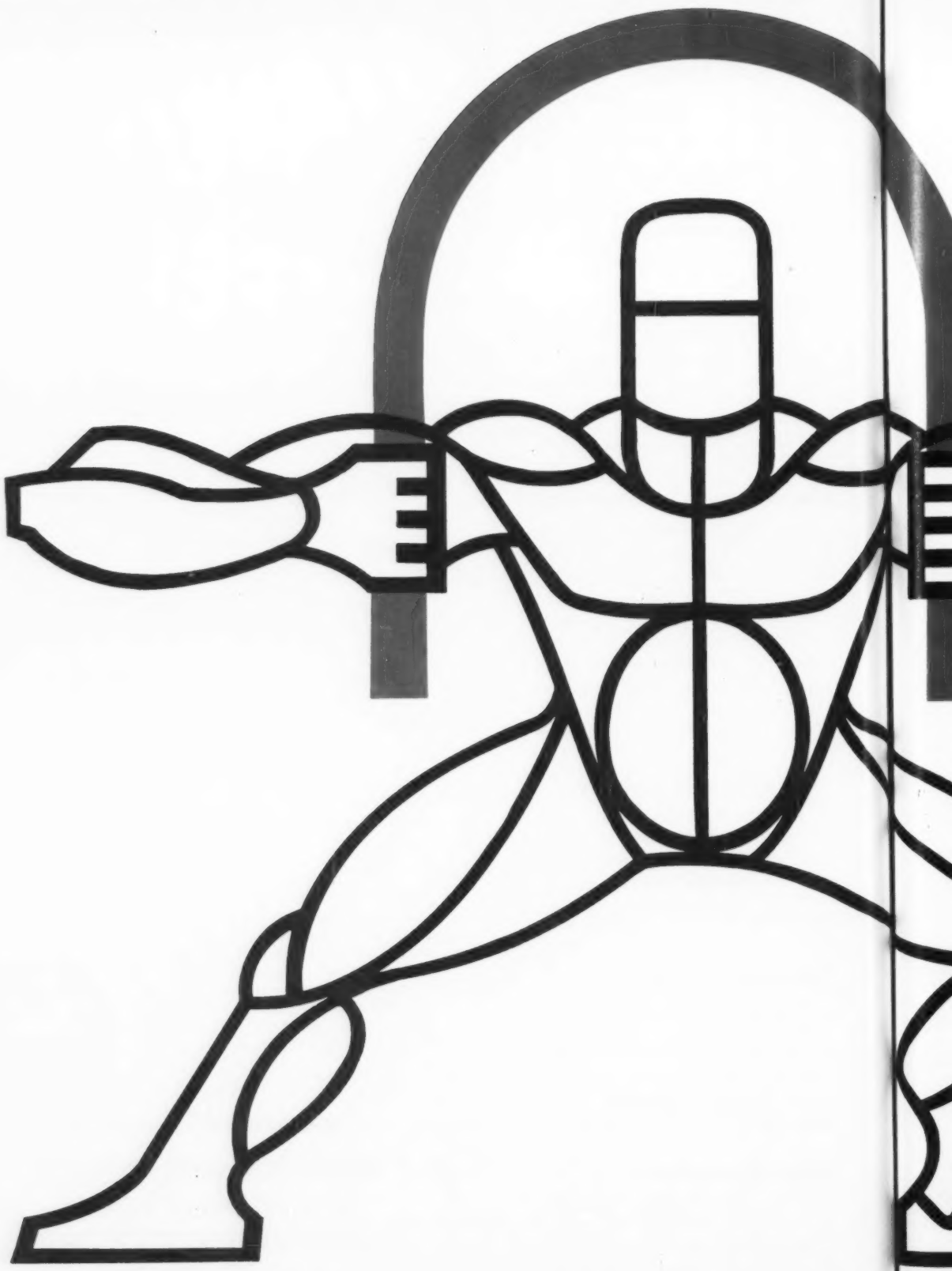
Townsend lockbolts are also available in carbon steel and aluminum alloy in a wide range of diameters and grip lengths in brazier, button and 90° countersunk head styles. Write today for information to Engineered Fasteners Division, P.O. Box 71-B, Ellwood City, Pennsylvania.

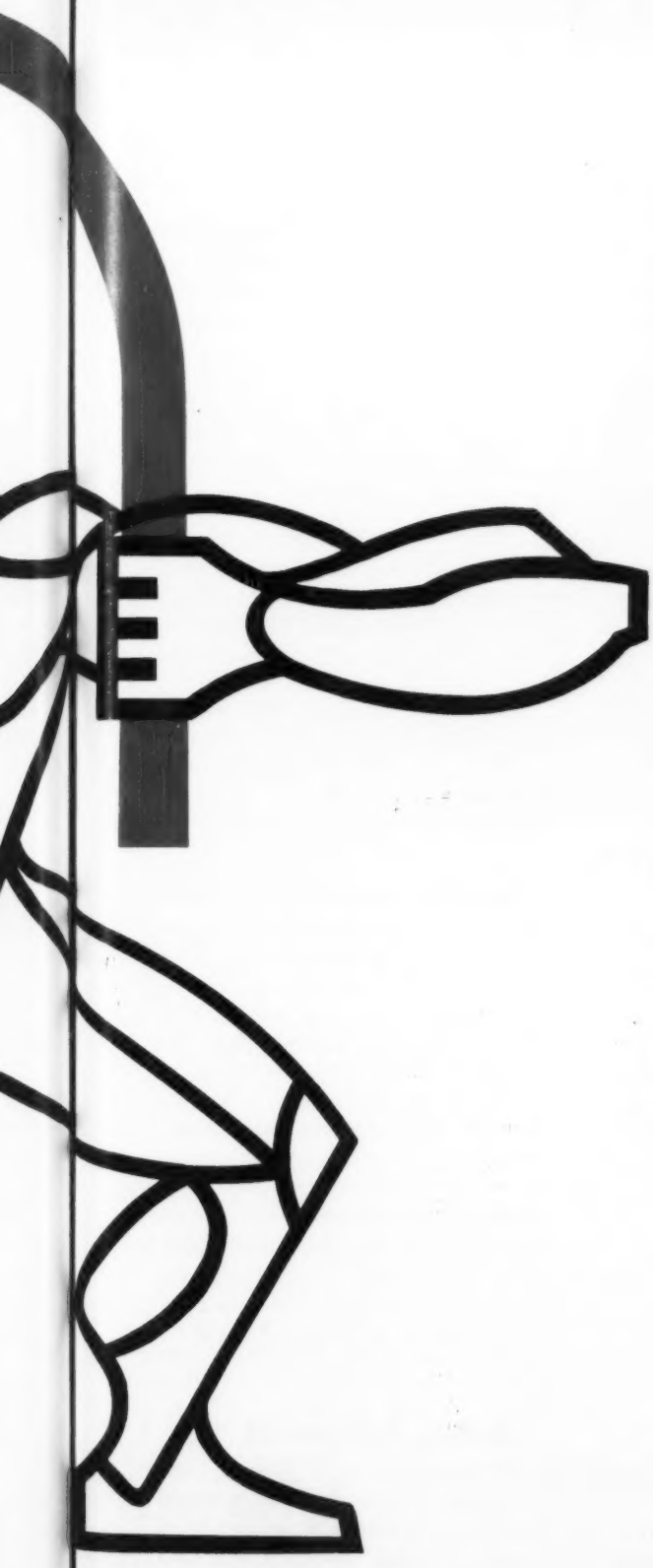
Licensed under Huck patents RE 22,792; 2,114,493; 2,527,307; 2,531,048; 2,531,049 and 2,754,703

Townsend Company

Engineered Fasteners Division

ELLWOOD CITY • PENNSYLVANIA





NOW... SUPERIOR FORMABILITY IS AVAILABLE IN AN EXTRA-STRENGTH STEEL

N-A-XTRA

BEST LOW-ALLOY EXTRA-STRENGTH STEEL YOU CAN BUY

N-A-XTRA HIGH-STRENGTH is a heat-treated steel now available in minimum yield strengths of 80,000-110,000 psi.

Unlike most steels of this strength and toughness, N-A-XTRA can be cold formed into difficult shapes, gas-cut, sheared, machined, and otherwise handled by conventional fabricating methods. It has superb weldability—by any process. And its great strength gives designers and engineers a unique opportunity to eliminate useless dead weight from finished products.

For complete information on N-A-XTRA—the best low-alloy extra high-strength steel you can buy—write Great Lakes Steel Corporation, Detroit 29, Michigan, Dept. A-9.

N-A-XTRA

GREAT LAKES STEEL

A DIVISION OF NATIONAL STEEL CORPORATION

BOILER TUBES POWER BRUSHED CLEAN prior to welding. Automatic machine setup inserts end of tube between Osborn brush rolls . . . cleans rotating tube on pre-set time cycle . . . stops and ejects . . . repeats operation.

SOLVED

with OSBORN Power Brushing

Before these boiler tubes can be induction welded—scale and hardened preservative oil must be removed.

This manufacturer does the job simply . . . efficiently with fast, automatic Osborn Power Brushing.

Quality and uniformity of the finished tubes are excellent . . . to help assure strong welds. *Cost is less* than the former blast-cleaning method, and the operation is *cleaner*, too . . . no flying grit.

This is typical of the many new . . . varied—and often unique—metal cleaning and finishing operations being done throughout industry by modern Osborn Power Brushing.

An **O**sborn **B**rushing **A**nalysis—made in your plant now—can *pinpoint new savings* for you, too. Write us for details. *The Osborn Manufacturing Company, Dept. F-86, Cleveland 14, Ohio.*

Osborn Brushes

OSBORN

POWER, PAINT AND MAINTENANCE BRUSHES
METAL FINISHING MACHINES . . . AND FINISHING METHODS
FOUNDRY PRODUCTION MACHINERY

FREE LITERATURE

protection to edges of parts in shipment. Adaptable to any outline shape, it comes in widths of 1¼ and 2 in., in rolls or pre-cut lengths. A wide variety of applications is illustrated. (Flex-O-Lators, Inc.)
For free copy circle No. 13 on postcard, p. 101

CO_2 Welding Processes

Three processes, one fully automatic, and two semiautomatic, for CO_2-shielded welding are described in a 16-page brochure. Various applications are listed, and resulting physical and mechanical properties are discussed. (A. O. Smith Corp.)
For free copy circle No. 14 on postcard, p. 101

Arbor Bearings

Anti-friction arbor support bearings of a new design are described in a four-page bulletin, with data including specifications and construction details of bearings for use in milling machines. Free-running pilot bearings for supporting rotary shank-type tools are also included. (Briney Mfg. Co.)
For free copy circle No. 15 on postcard, p. 101

No-Corrosion Fasteners

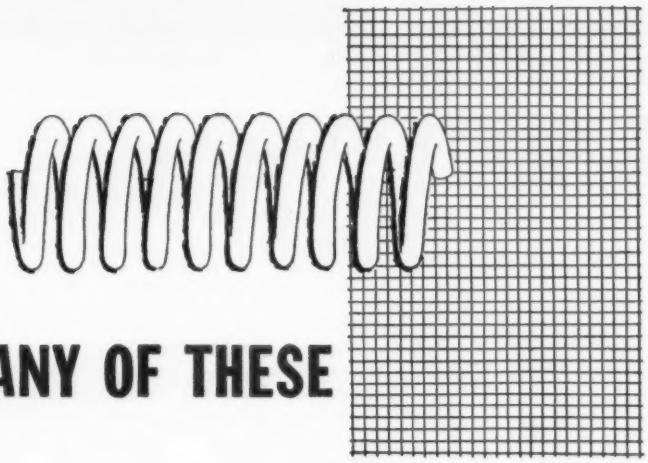
A complete line of corrosion-resistant fastenings is listed in an 88-page Net Price Catalog designed to "make it easy for the customer to make his buying decision." (Write on company letterhead to The H. M. Harper Co., Sales Materials Dept., Morton Grove, Ill.)

Electric Hoists

A line of overhead-traveling electric hoists with ¼- to 12-ton capacity is covered in a 34-page catalog. (American Engineering Co.)
For free copy circle No. 16 on postcard, p. 101

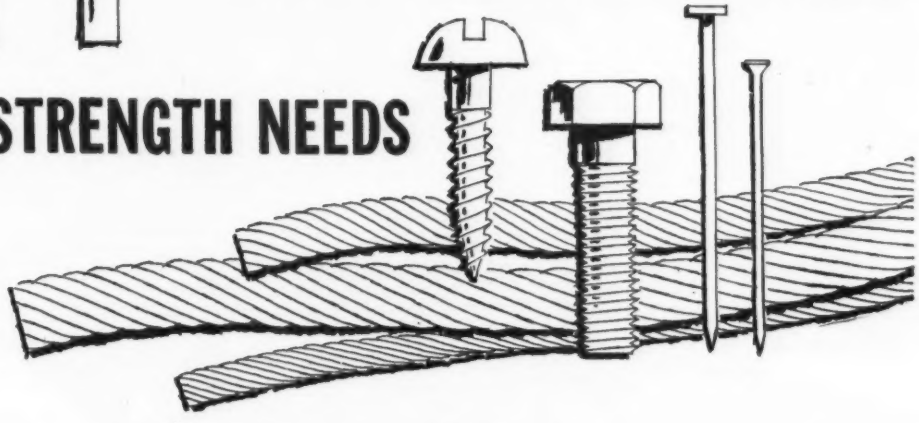
Safety Equipment

Welding goggles, glasses, and helmets, and a series of industrial respirators, are illustrated in a four-page brochure. (Sellstrom Mfg. Co.)
For free copy circle No. 17 on postcard, p. 101



IF YOU MAKE ANY OF THESE

FOR CORROSION RESISTANCE AND HIGH STRENGTH NEEDS



See what Allegheny Stainless steel wire can do to cut your costs

The assurance of uniform quality, order after order, shows up in lower shop costs in whatever you make from stainless steel wire. A-L specifications are faithful in every batch—in all grades of stainless steel cold-drawn wire, tempered to match many correlations of hardness and tensile strength.

If you make springs, you get uniform tensile strength in every batch of spring wire . . . and also with rope wire.

In weaving wire you get the same dead-soft temper and uniform properties for perfect weaving without ridges.

In cold-headed wire you get absolute uniformity that ties in with automation production processes.

Call on the A-L technical staff for help with selection or fabrication problems, or help in cutting shop costs in processing operations. They will be glad to work with you.

Whatever you make in stainless wire, Allegheny Ludlum offers you adequate stocks of all standard grades for fast shipment. Special stainless steel wire on order.

Allegheny Ludlum Steel Corporation, Oliver Building, Pittsburgh 22, Pa. Address Dept. A-201.

Write for your copy of Allegheny Stainless Wire, Illustrated 20-page booklet, which fully describes analyses, physical properties, corrosion resistance and principal applications of stainless wire.

7550

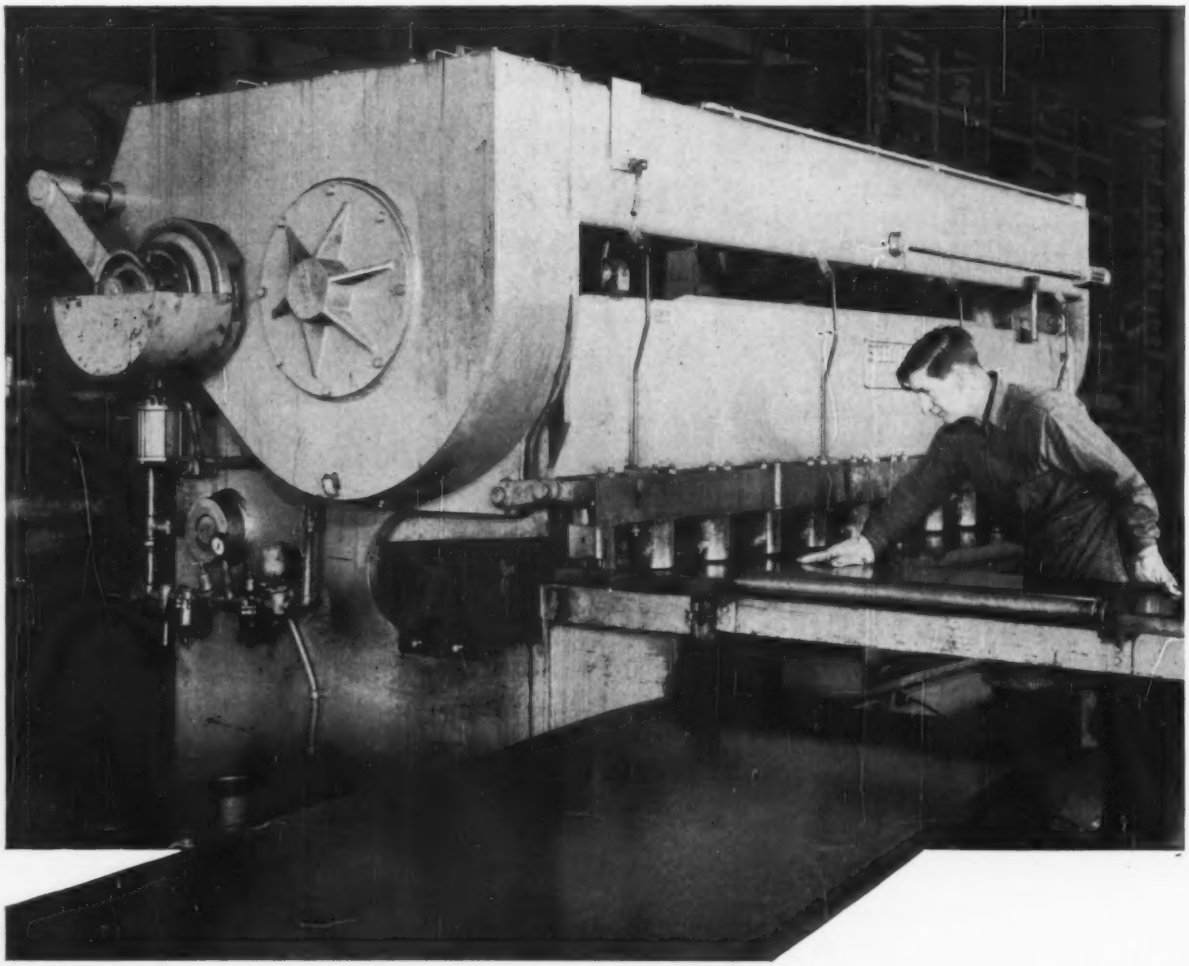
ALLEGHENY LUDLUM

for warehouse delivery of Allegheny Stainless, call RYERSON

Export distribution: AIRCO INTERNATIONAL

EVERY FORM OF STAINLESS . . . EVERY HELP IN USING IT

.002 inch clearance between knives produces sharp, straight, accurate edges in the 18 gauge metal cut on this Steelweld Shear. The clearance is easily increased to suit heavier metal. The shear operator is not confined to some average compromise clearance.



Cuts 1200 PIECES Per Hour

Farm Equipment Manufacturer Gets Sharp, Accurate Cuts Because of Steelweld's Exclusive Knife Clearance Adjustment

MASSEY-HARRIS-FERGUSON, Ltd., Toronto, well known throughout the world as a leading manufacturer of farm implements does much of the cutting required for the various steel parts with Steelweld Shears.

Massey-Harris-Ferguson obtains the best possible cuts because the knife clearance can be adjusted exactly to suit the thickness of metal being cut. It is not necessary to depend upon some compromise difficult-to-change knife setting with Steelweld Shears, as they are easily adjusted to the correct clearance in 10 seconds.

Write for free copy of Catalog No. 2011
Gives construction and engineering details

Illustrated is one of the many cutting jobs for which Steelwelds are used. 108-inch lengths of 18 gauge steel are cut into six 18-inch pieces at a rate of 1200 per hour. Knife clearance setting for this work is .002 inch. This shear has been in operation 24 hours a day, six days a week, for many years.

STEELWELD
PIVOTED BLADE **SHEARS**

STEELWELD DIVISION • THE CLEVELAND CRANE & ENGINEERING CO. • 4856 E. 282 ST. • WICKLIFFE, OHIO

FREE LITERATURE

Continued

These publications describe money-saving equipment and services . . . they are free with no obligation . . . just circle the number and mail the postcard.

International Inch

An eight-page circular discusses the problems manufacturers will encounter as a result of America's changeover to the International inch on July 1, 1959. (Pratt & Whitney Co. Inc.)

For free copy circle No. 21 on postcard

Aluminum-Bronze Bars

A four-page folder describes aluminum-bronze bars, both solid and cored, plus tubing centrifugally cast for bearing making, and their advantages. Information covering applications is included. (Johnson Bronze Co.)

For free copy circle No. 22 on postcard

15-Ton Punch Press

A two-page brochure describes a 15-ton punch press with several features for safety and versatility. (Kenco Mfg. Co.)

For free copy circle No. 23 on postcard

Power-Control Rooms

A two-page bulletin discusses features and advantages of a line of "packaged" power and control rooms for metal-rolling and process industries. Complete process-line controls and power components are grouped compactly in these custom-built, self-contained units. (General Electric Co.)

For free copy circle No. 24 on postcard

Soluble Coolants

Two water-soluble cooling compounds, one for cutting and one for grinding, are described in a four-page pamphlet. Both are stain- and rust-free, non-toxic, and odorless. Both have brought impressive increases in production and enabled working of very difficult metals. (Saffire Mfg. Co.)

For free copy circle No. 25 on postcard

Fire-Fighting Equipment

A complete line of all types of fire-fighting equipment and fire-detection devices is covered in a 16-page brochure. Application data are included. (Walter Kidde & Co., Inc.)

For free copy circle No. 26 on postcard

Visual Control Chart

A visual control chart for numerous uses is described in a brochure. It is moved daily, on rollers, to keep up with time, and show delinquencies for corrective action. (Rol-a-Chart Div., Conley, Baltzer & Steward)

For free copy circle No. 27 on postcard

Air Gages

A 32-page catalog describes a one-master air gage measuring system and specifies two air gage models (10,000:1 and 20,000:1 magnification). Instructions are provided on how to apportion gaging ranges to suit tolerances. Applications to automation are also covered. (Federal Products Corp.)

For free copy circle No. 28 on postcard

Shock Isolators

Isolation of shock and vibration is discussed, and a line of shock and vibration isolators for machinery and other equipment is described, in a four-page bulletin. (Barry Controls Inc.)

For free copy circle No. 29 on postcard

Textured Metals

A brochure contains information on a line of textured metals for architectural and product design. Different from coined or corrugated metals in that they are produced in synchronized rolls under controlled pressure, they are cited for their strength, durability, style, utility,

Postcard valid 8 weeks only. After that use own letterhead fully describing item wanted. **8/27/59**

Circle numbers for Free Technical Literature, Design Digest, or New Equipment:

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90

If you want more details on products advertised in this issue fill in below:

Page .....Product .....

Page .....Product .....

Page .....Product .....

INVALID WITHOUT COMPANY NAME—TYPE OR PRINT

Name .....

Title .....

Product Manufactured .....

Company .....

Co. Address .....

.....

City ..... Zone .... State .....

FIRST CLASS
PERMIT No. 36
NEW YORK, N. Y.

BUSINESS REPLY CARD
No postage necessary if mailed in the United States

POSTAGE WILL BE PAID BY

THE IRON AGE

Post Office Box 77, Village Station
NEW YORK 14, N. Y.

BUSINESS REPLY CARD

No postage necessary if mailed in the United States

FIRST CLASS
PERMIT No. 36
NEW YORK, N. Y.

POSTAGE WILL BE PAID BY

THE IRON AGE

Post Office Box 77, Village Station

NEW YORK 14, N. Y.

Postcard valid 8 weeks only. After that use own letterhead fully describing item wanted. **8/27/59**

Circle numbers for Free Technical Literature, Design Digest, or New Equipment:

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90

If you want more details on products advertised in this issue fill in below:

Page .....Product .....

Page .....Product .....

Page .....Product .....

INVALID WITHOUT COMPANY NAME—TYPE OR PRINT

Name .....

Title .....

Product Manufactured .....

Company .....

Co. Address .....

.....

City ..... Zone .... State .....

FREE LITERATURE

and economy. (Ardmore Products, Inc.)

For free copy circle No. 30 on postcard

Nickel Plating

A 17-page booklet, "Industrial Nickel Plating," presents data and descriptive material on many aspects of this major industrial process. (The International Nickel Co.)

For free copy circle No. 31 on postcard

Flame Failure Device

A device to warn of flame failure in oil, coal, or gas installations eliminates explosions and insures maximum protection against buildup of explosive gases and fumes within the furnace. (Photomation, Inc.)

For free copy circle No. 32 on postcard

Magnetic Pulleys

A complete line of "radial design" permanent magnetic pulleys for use in protection, purification, reclamation, and separation techniques is described in a catalog. (Magnetic Engineering & Mfg. Co.)

For free copy circle No. 33 on postcard

Floor Sweepers

A line of manual and motorized floor sweepers is described and illustrated in a four-page brochure. They are reported to be very effective in cleaning concrete floors of metal chips. (Parker Sweeper Co.)

For free copy circle No. 34 on postcard

Electric Hoists

A line of electric wire-rope hoists with capacities from 500 to 4000 lb, and including several new models, is illustrated and specified in a six-page brochure. (Robbins & Myers, Inc.)

For free copy circle No. 35 on postcard

Phosphor Bronze

A 20-page catalog and handbook outlines the development of phosphor bronze and its advantages. A line of phosphor bronze alloys in all forms and special shapes is specified in tabular form. Information is included on a fine-grain phosphor bronze and on facilities for continuous casting of phosphor bronze strip. (H. K. Porter Co., Inc., Riverside-Alloy Metal Div.)

For free copy circle No. 36 on postcard

Safety Cup Wheels

Safety cup wheels for portable grinding, with a guard built into the back, are described in a folder. Advantages of the built-in guard are stressed. (The Carborundum Co.)

For free copy circle No. 37 on postcard

Stainless Tubing

A high-chrome, high-nickel alloy designed for high-temperature use and resistance to corrosion, is specified in a product bulletin. It is available in welded and seamless tubing and pipe forms. (The Babcock & Wilcox Co.)

For free copy circle No. 38 on postcard

Metal Packings

A 24-page booklet covers the subject of metal packings for pumps, engines, and compressors, discussing all types of metal packing and treating pressure, temperature, and other service requirements. (The Garlock Packing Co.)

For free copy circle No. 39 on postcard

Snagging Wheels

Abrasive snagging wheels, both regular resinoid and vitrified bonded, for portable grinding machines, are described in a four-page bulletin. (Simonds Abrasive Co.)

For free copy circle No. 40 on postcard

Liquid Buffing

A buffing method using a water-base emulsion-type liquid abrasive composition applied automatically to rotating buffing wheels with spray guns is described in a brochure. Equipment used is illustrated. (The Lea Mfg. Co.)

For free copy circle No. 41 on postcard

Quality in Ascendancy

The superiority of the vast number of products that are—and can be made from Roebling Cold Rolled Flat Spring Steel is a fact known throughout all industry.

You pay for mechanical and dimensional uniformity when you buy flat spring steel...you *get* it when you buy Roebling.

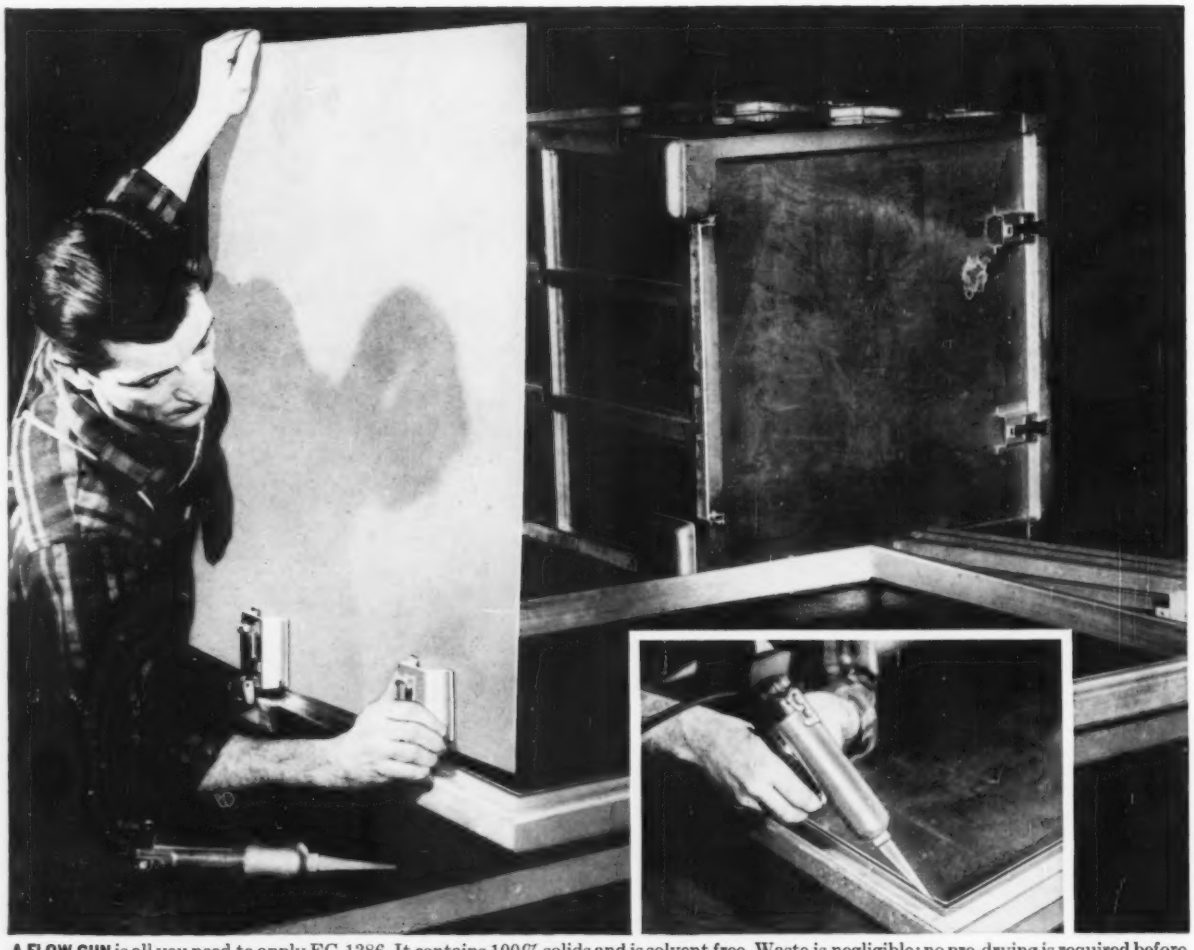
For information on how our products can help *yours*, write Wire and Cold Rolled Steel Products Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

ROEBLING

Branch Offices in Principal Cities
Subsidiary of The Colorado Fuel and Iron Corporation

Roebling...Your Product is Better for it

How 3M Adhesives solved this Modular Packaging System problem



A FLOW GUN is all you need to apply EC-1386. It contains 100% solids and is solvent free. Waste is negligible; no pre-drying is required before joining sections. The adhesive bond can be cured to high ultimate strength quickly in an air-circulating oven (one to two minutes at 500°F).

The Zero Manufacturing Co., Burbank, California, faced a structural joining problem in its Modular Shipping Containers.

The containers were essentially a framework of slotted aluminum extrusions fitted with stressed aluminum sheets. With thin gauge metals, riveting lacked necessary strength and water-tightness; welding produced distortion and costly after-finishing.

Then, 3M Adhesive EC-1386 was chosen to solve the problem. This high-strength adhesive met every requirement. It sealed as it bonded. Total contact area joining provided the required strength. Other advantages included the elimination of drilling and riveting, welding and after-finishing operations. And the use of EC-1386 was accomplished with relatively unskilled labor and with low capital investment. And so, another company discovers—3M adhesives save time, save money, simplify production.

SEE WHAT 3M ADHESIVES CAN DO FOR YOU!

Contact your 3M Field Engineer. Or, for more information and free literature on 3M's complete line of adhesives, write on your company letterhead to: A.C.&S. Division, 3M, Dept. SAQ-89, St. Paul 6, Minnesota.

ADHESIVES, COATINGS AND SEALERS DIVISION

MINNESOTA MINING AND MANUFACTURING COMPANY

. . . WHERE RESEARCH IS THE KEY TO TOMORROW

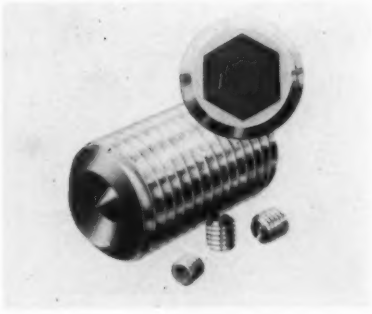
3M COMPANY

New Materials and Components

"W-Point" Screw Sets and Holds Better

Certain studies indicate that as a conventional setscrew is tightened, the crest of the cup edge oscillates and fails to impress a uniform track on the holding surface. This action is aggravated by the tipping action of the hex wrench. These adverse conditions are overcome with a new screw incorporating a cone point within the cup. Contacting the work before the edge, it helps the screw to track evenly with a well defined groove and thus increase its holding power. Backout torque climbs 30 pct, and resistance to vibration and to rotary slippage are both increased 50 pct. (Parker-Kalon, a div. of General American Transportation Corp.)

For more data circle No. 42 on postcard, p. 101



Weld Zones Beef Up Critical Aluminum Areas

A technique of precision-welding zones of super-hardness and high wear-resistance improves critical areas of aluminum castings and forgings. The aluminum welding alloys also retain this hardness at very high temperatures. In automotive use, for instance, major prospects for treatment are piston-ring grooves, brake drums, valve seats, and sheaves. Four alloys are under test; one provides a Brinell hardness of 250 at room temperature—as hard as heat-resistant high-alloy steel. (Aluminum Co. of America)

For more data circle No. 43 on postcard, p. 101

Notched Double Washer Simplifies Adjustments

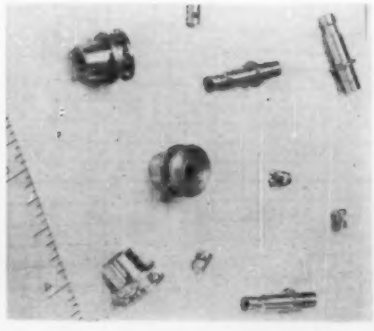
An indexing washer provides precise linear and angular adjustment of control linkage and other such components. Each notch in the mating serrated washer represents 0.001 in. linear adjustment, making accurate adjustments easier and faster. Greater thread protection is afforded, also. Whereas, in destructive tests, former washers destroyed one thread upon failure, these ruptured in the internal tab without causing any thread damage. They come in a wide size range. (Arwood Precision Casting Corp.)

For more data circle No. 44 on postcard, p. 101

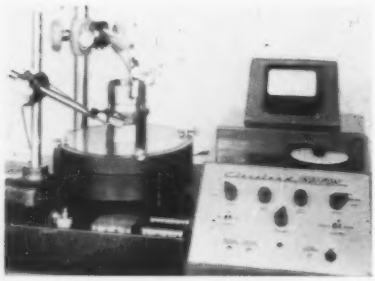
Diecasting Can Include Secondary Operations

A new improvement in diecasting tiny zinc parts includes automatic secondary operations as part of a single casting cycle. This method enables chamfering, drilling, milling—and even assembly operations—to be performed directly on the machine without reorienting the part. Eliminating the separate finishing required with conventional processes, this process cuts costs and improves tolerance control. A further addition to the versatility of automatic diecasting is the possibility of producing a host of different gear-and-pinion combinations with interchangeable die units covering a wide range. (Gries Reproducer Corp.)

For more data circle No. 45 on postcard, p. 101



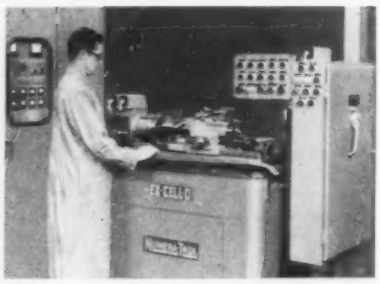
New Equipment and Machinery



Checks Part Trueness With Ultra Precision

A new gage quickly checks roundness, concentricity, alignment, squareness, or flatness to 3 millionths. It is also useful in making machine setups. The ultra-precision spindle on which the part is rotated serves as reference point, and the gage head can be moved without losing the reference axis. The adjustable table is used to align the part axis with the spindle. Traces on a graph recorder present a true picture of the part. Various models are available. (Cleveland Instrument Co.)

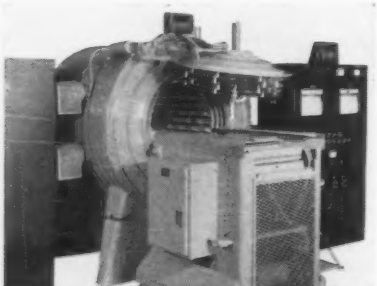
For more data circle No. 46 on postcard, p. 101



Tape-Mills Complex Contours in One Setting

Tape-controlled, a cam milling machine mills three-dimensional contours complete from the solid. Capable of machining a wide variety of complex cams and other shapes, it cuts lead time, tooling costs, and machining costs for both complex prototypes and production parts. A sensitive and reliable control system with command incremental pulses of only 50 millionths achieves consistently close tolerances. Rugged, the machine incorporates a variety of features for fast production. (Ex-Cell-O Corp.)

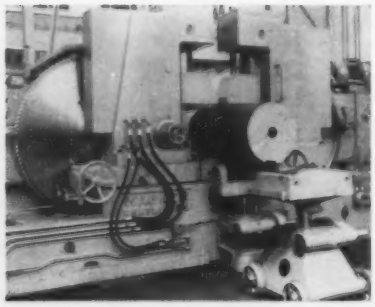
For more data circle No. 47 on postcard, p. 101



Vacuum Furnace Aids Brazing of Stainless

An automatic high-vacuum cold-wall furnace with 24 x 36 x 12-in. workspace, normal pressure of 1 micron Hg, and temperature of 2275°F is specially adaptable for copper and nickel brazing of flat stainless assemblies. Vacuum reduces surface tension of the brazing alloy, eliminating the crevices and corrosion of atmosphere or hydrogen brazing. Assemblies are heated from above and below for uniform heating. Other uses are hardening, tempering, drawing, and annealing refractory and reactive metals, stainless and special alloy steels. Features include easy charging, choice of manual control, and safety devices. (Ipsen Industries, Inc.)

For more data circle No. 48 on postcard, p. 101

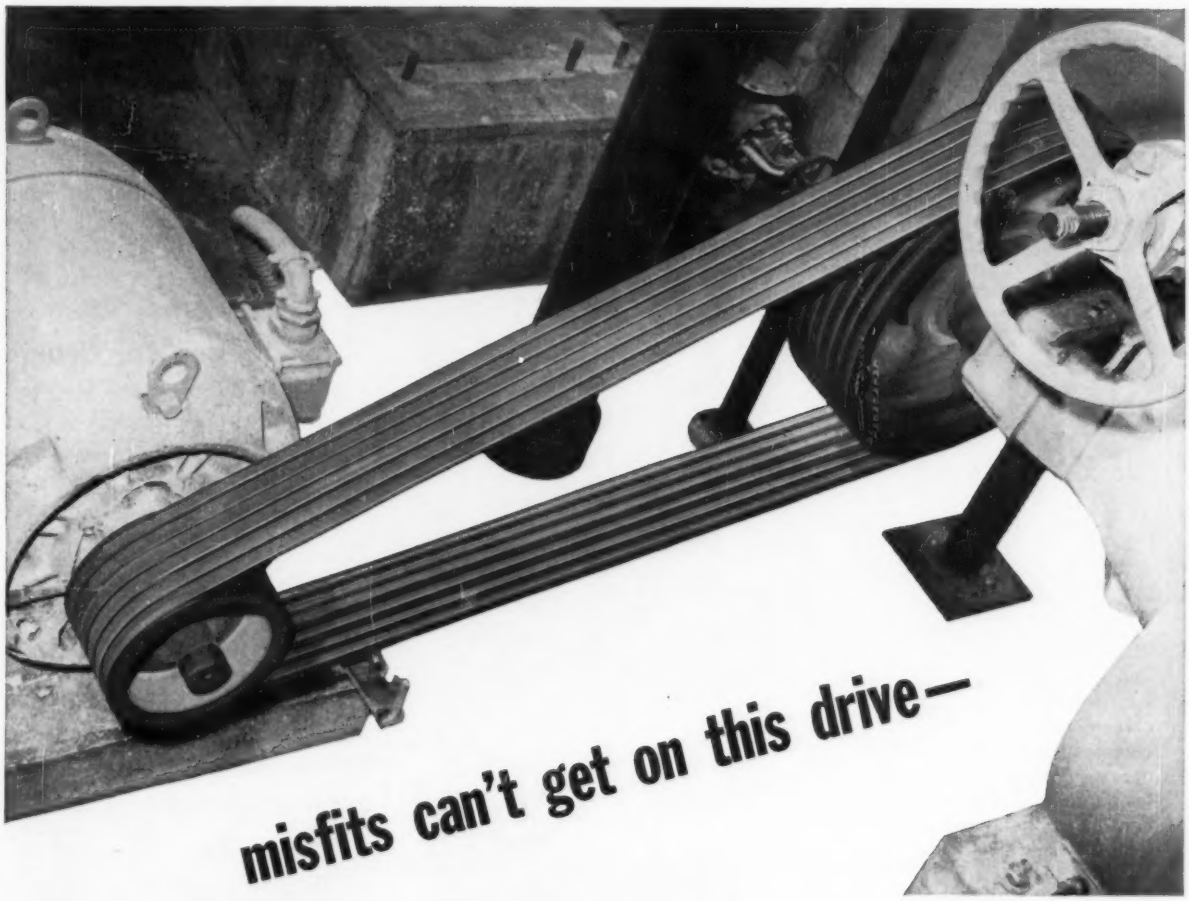


Duplex Setup Speeds Large-Diameter Sawing

Sawing large rounds, squares, and slabs, including stainless and most super alloys, is accelerated with a Wagner duplex saw (German). Opposed saws cut from both sides. Toward center, one retracts while the other completes the cut. One vise column is fixed, one adjustable. A powered lifting infeed roller with 12½-ton capacity eases loading. A power table removes cutoff pieces. Features include infinitely variable feed, automatic saw alignment, and fine adjustment to insure following scribed lines. (Albert Klingelhofer Machine Tool Corp.)

For more data circle No. 49 on postcard, p. 101

US RUBBER ROYAL V-BELTS



THE BELTS ARE U.S. ROYAL

The above drive in the plant of a large paper manufacturer proves again the perfect matching of U. S. Royal V-Belts. They are *born matched . . . and stay matched.*

This matchability has been demonstrated again and again with U. S. Royal V-Belts from Maine to California. You can call any U. S. V-Belt Distributor, specify the belt size and then receive belts of perfect match without delay. Why? Because the distributor serves you immediately from stock, is freed from the time-wasting job of putting belts (in all sizes up to 180") on a matching machine. Rejects just don't happen.

U. S. Royal V-Belts excel because they are made by entirely new methods of curing, they have new pulling members, new jackets incorporating new technical advances in rubber.

• • •

When you think of rubber, think of your "U. S." Distributor. He's your best on-the-spot source of technical aid, quick delivery and quality industrial rubber products.

US RUBBER

Mechanical Goods Division

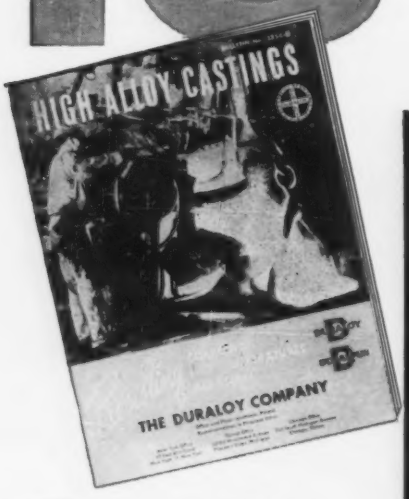
United States Rubber

WORLD'S LARGEST MANUFACTURER OF INDUSTRIAL RUBBER PRODUCTS

Rockefeller Center, New York 20, N.Y. In Canada: Dominion Rubber Company, Ltd.

16

pages of useful information about



HIGH ALLOY CASTINGS

DURALOY DURASPUN

This is our New General Bulletin—3354G. It's full of information and data on the chrome-iron and chrome-nickel castings so necessary when corrosion, high temperatures and abrasion must be resisted. It will serve as a general selection guide for those specifying or using such castings.

The bulletin also reviews briefly our experience in both static and centrifugal castings, an experience going back to the pioneering days of 1922 and 1933 respectively. It also tells about our facilities for furnishing castings to any desired analysis, welding, X-ray and gamma ray testing, metallurgical and foundry control.

WRITE or CALL our nearest office for a copy.
We believe you will find it helpful in your work.

The DURALOY Company

OFFICE AND PLANT: Scottdale, Pa.
EASTERN OFFICE: 12 East 41st Street, New York 17, N. Y.
ATLANTA OFFICE: 76—4th Street, N.W.
CHICAGO OFFICE: 332 South Michigan Avenue
DETROIT OFFICE: 23906 Woodward Avenue, Pleasant Ridge, Mich.

NEW EQUIPMENT

Core Knockout Machine

A foundry core knockout machine is particularly suited to light and nonferrous metal casting. The air-operated hammer is powered from the shop air line. The casting is gripped pneumatically. While its purpose is removing core sand, it is also useful for cleaning off mold sand. (United States Drill Head Co.)

For more data circle No. 50 on postcard, p. 101

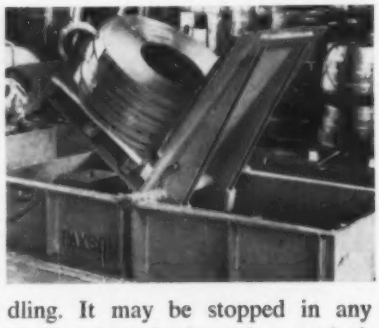
'Can Opener' for Drums

Messy, time-consuming, and potentially hazardous removal of steel drum heads with hammer and chisel can go by the boards. A new powered tool removes them in can-opener fashion and leaves a smooth edge. (Krist Machine Works)

For more data circle No. 51 on postcard, p. 101

Coil Upender

Easily and quickly turning slitted steel coils vertical or horizontal, a Paxson coil upender speeds han-



dling. It may be stopped in any position from horizontal to vertical, and upsetting speed is controllable through a hand valve. (Industrial Machine Representatives Co.)

For more data circle No. 52 on postcard, p. 101

Strapping Sealer

A steel strapping sealer uses a special locking handle and a crimping action seal to provide positive seals for heavy-duty carloading operations. It is designed for use with 2 x 0.050-in. flat steel strapping. (U. S. Steel Corp.)

For more data circle No. 53 on postcard, p. 101

TO EACH HIS OWN-climate, that is-

WITH "BUFFALO" ZONE CONTROL CABINETS

He's comfortable because the heat's on in his office. She's comfortable, too — but her office area is air cooled. The executive offices are on the shaded north side of the building and a cold wind is blowing. The stenographic department is located in the windowless central portion of the floor, where internal heat load raises the temperature.

Time was when conditions like these could only be corrected the expensive way — by installing several separate air conditioning units for each of many zones.

Now, with a *single* "Buffalo" Zone Control Cabinet, you can provide low-cost heating, cooling, dehumidifying — in any desired combination — for each area in your offices or plant. Controls for each zone can be manual or automatic.

We all know that a comfortable working climate increases personnel efficiency. Your offices or plant can have individual zone climate control — *without the expense of several separate units.* It will pay you to investigate "Buffalo" Zone Control Cabinets. Call your "Buffalo" engineering representative, or write for Bulletin AC-220.

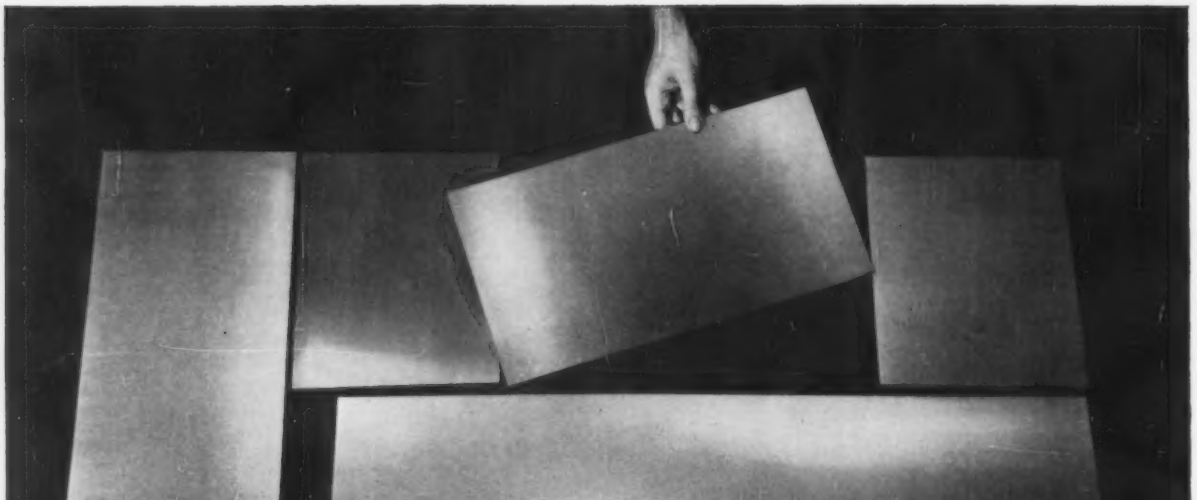
BUFFALO FORGE COMPANY

Buffalo, N. Y.

Buffalo Pumps Division, Buffalo, N. Y.

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

VENTILATING • AIR CLEANING • AIR TEMPERING • INDUCED DRAFT • EXHAUSTING • FORCED DRAFT • COOLING • HEATING • PRESSURE BLOWING

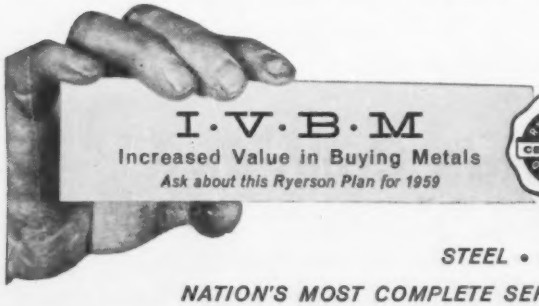


How many sheets could you make from today's waste aluminum?

If you tend to shrug off scrap as an unavoidable business loss, here's a plan that can change your thinking. It's the Ryerson Aluminum Sheet Plan that makes exact lengths and widths available to most users—generally on a *net weight basis.*

Under this plan, you order the exact sizes you need for your production runs—and Ryerson produces them quickly from coil stock on the most modern and accurate slitters and cut-to-length lines. You thus avoid buying metal that you cannot use . . . save the time and labor of processing within your own plant. And in addition, Ryerson can schedule deliveries to match your production pace, enabling you to convert storage space to more productive use and release capital tied up in inventories.

Here you'll find the widest selection of alloys, tempers and thicknesses plus expert technical help on selection and fabrication problems. So ask your Ryerson representative to review your production requirements with you and show you how to eliminate your scrap problems immediately.



RYERSON CERTIFIED QUALITY

RYERSON STEEL®

Member of the INLAND Steel Family

STEEL • ALUMINUM • PLASTICS • METALWORKING MACHINERY

NATION'S MOST COMPLETE SERVICE CENTERS IN PRINCIPAL CITIES COAST TO COAST

The Iron Age Summary

Stocks Look High, But Are They?

On the surface, inventories appear to be ample to take most users through September.

But spot shortages are now an irritating fact, not something feared for the future. Start-up worries are getting attention as automakers seek ingots.

▪ Spot steel shortages that were on the horizon two weeks ago are cropping up with more frequency, and will continue to do so.

To date, most of the major steel users have tonnage that should carry them through September. Trouble spots are showing up among parts suppliers who were unable to lay in big tonnages. Stampers, for one example, are low on inventory.

Model Changes Coming — The major consumer industries, automotive, appliance and farm equipment, are all involved in new model changes. With new parts and specifications, trouble is expected from suppliers who could not plan ahead for the changes.

The construction industry is also sensitive. Because most firms order steel for jobs after the contract award, they rarely accumulate inventory ahead of time. So, today, construction companies with inventories, particularly of already short wide-flange beams or heavy plates, are getting most of the business.

Slowdowns Inevitable—Outwardly, steel stocks appear ample to carry most consumers through September. But many consumers will have to start curtailing their operations long before they reach the end of their stocks. To conserve supplies, many plants will have to reduce operations at least a month before they reach the danger level of inventories.

The problem of filling pipelines after the strike's end is beginning to get attention from big consumers. It has been learned that at least one automaker is trying to line up ingots. The intent is to place them with a steel mill for immediate processing (and fast delivery) at the strike's end.

Import Pro's and Con's—In another important area, steel imports are shaping up into a controversy. Many users are active in the import market—more so than care to admit to their usual suppliers. Some report imports are a life-saver at this time. Others are becoming disenchanted.

Steel imports are now coming into this country at about 400,000 tons per month. But import prices have jumped sharply since the strike. And importers are not eager to produce steel for orders booked earlier at lower prices.

Foreign mills are slow on shipments and don't meet schedules as well as customers would like.

Nor are foreign mills likely to increase their shipments to the U. S. in spite of the impending shortage here. Demand is strong in Europe and traditional customers there must be taken care of first.

Steel Output, Operating Rates

Production (Net tons, 000 omitted)	This Week	Last Week	Month Ago	Year Ago
	332	325	353	1,728
Ingot Index (1947-1949=100)	20.7	20.2	22.0	107.6
Operating Rates				
Chicago	5.0	5.0	5.0	75.0
Pittsburgh	3.0	3.0	3.0	55.0
Philadelphia	12.0	12.0	15.0	74.0
Valley	10.0	10.0	10.0	49.0
West	0.0	0.0	0.0	78.5
Cleveland	0.0	0.0	0.0	53.0
Detroit	24.0	22.0*	24.0	46.0
Buffalo	0.0	0.0	0.0	67.0
South Ohio River	61.0	59.0*	59.0	53.5
South	12.0	12.0	12.0	77.0
Upper Ohio River	49.0	43.5*	49.0	82.5
St. Louis	77.0	80.0*	68.0	82.0
Aggregate	12.0	11.5	12.5	64.0

*Revised

Prices At a Glance

(Cents per lb unless otherwise noted)	This Week	Week Ago	Month Ago	Year Ago
Composite price				
Finished Steel base	6.196	6.196	6.196	6.188
Pig Iron (gross ton)	$66.41	$66.41	$66.41	$66.49
Scrap No. 1 hvy (Gross ton)	$40.17	$39.83	$39.50	$42.50
No. 2 bundles	$27.67	$27.50	$27.00	$29.50
Nonferrous				
Aluminum ingot	26.80	26.80	26.80	26.80
Copper, electrolytic	30.00	30.00	30.00	26.50
Lead, St. Louis	12.80	11.80	11.80	10.80
Magnesium	36.00	36.00	36.00	36.00
Nickel, electrolytic	74.00	74.00	74.00	74.00
Tin, Straits, N. Y.	103.00	102.50	101.75	94.75
Zinc, E. St. Louis	11.00	11.00	11.00	10.00

The Office Takes on a New Look

Modern trends in styling and construction of office furniture have changed business offices into attractive and practical rooms.

For the furniture business, the renovating boom has meant an increase in business that will continue even into the general office furniture lines.

▪ Taste and style have gradually been invading utility's domain in the business office during the last decade and no longer does the receptionist or secretary greet the executive's callers in drab surroundings. It has reached a point where almost every major dealer, distributor and manufacturer of office equipment has at least one top flight decorator as a member of his staff. And in some cases there are entire crews of specialists; textile experts, furnishing personnel and time-study men devoted to combining utility with attractiveness.

This trend has been a boon to the office furniture industry. One major dealer says his business is 22 pct above last year's. The average for the industry over the entire year is likely to be about 20 pct over 1958 figures.

A Stopping Point — However, general opinion in the trade is that the pendulum has swung possibly as far as it can in setting new trends in the decorative styling of executive offices. The situation exists where taste must control decor as not to have any reception room or executive suite appear ostentacious.

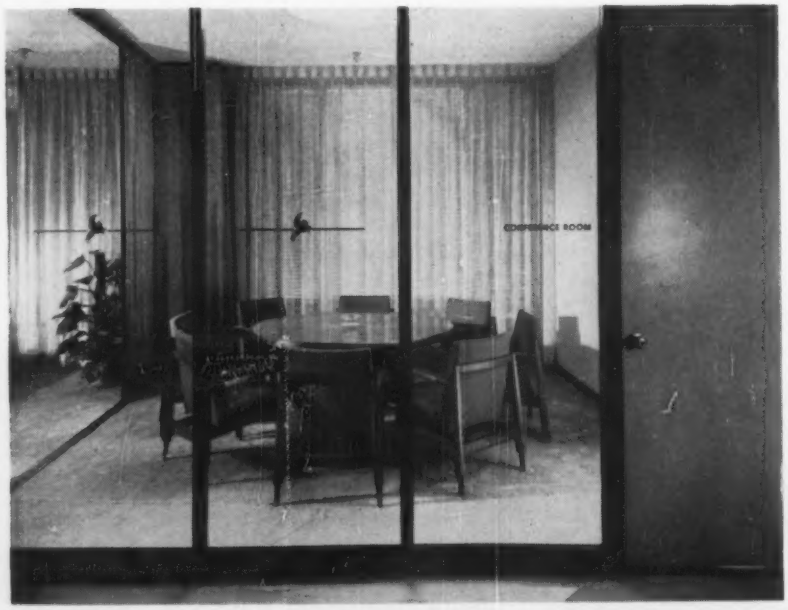
But the decorators still have a vast, almost untouched area to flaunt their wares—the collection of desks huddled in the centers of floors of large corporations. Here the direction has been to create a very practical, modular design setup, so that the standard unit can be added to or subtracted from, modified to the specific tasks of its occupant and still match adjacent pieces. But, in most instances, they are still painted flat greens and grays, although some color progress is being made, and are still constructed in shapeless design.

Utility A Must — A word of warning to the over anxious buyer who hasn't been keeping up with recent market trends has been issued by Charles S. Nathan, a New York dealer. He says he has come across instances of beautifully and attractively designed offices that had no practicality because utility had been ignored when renovation work was done.

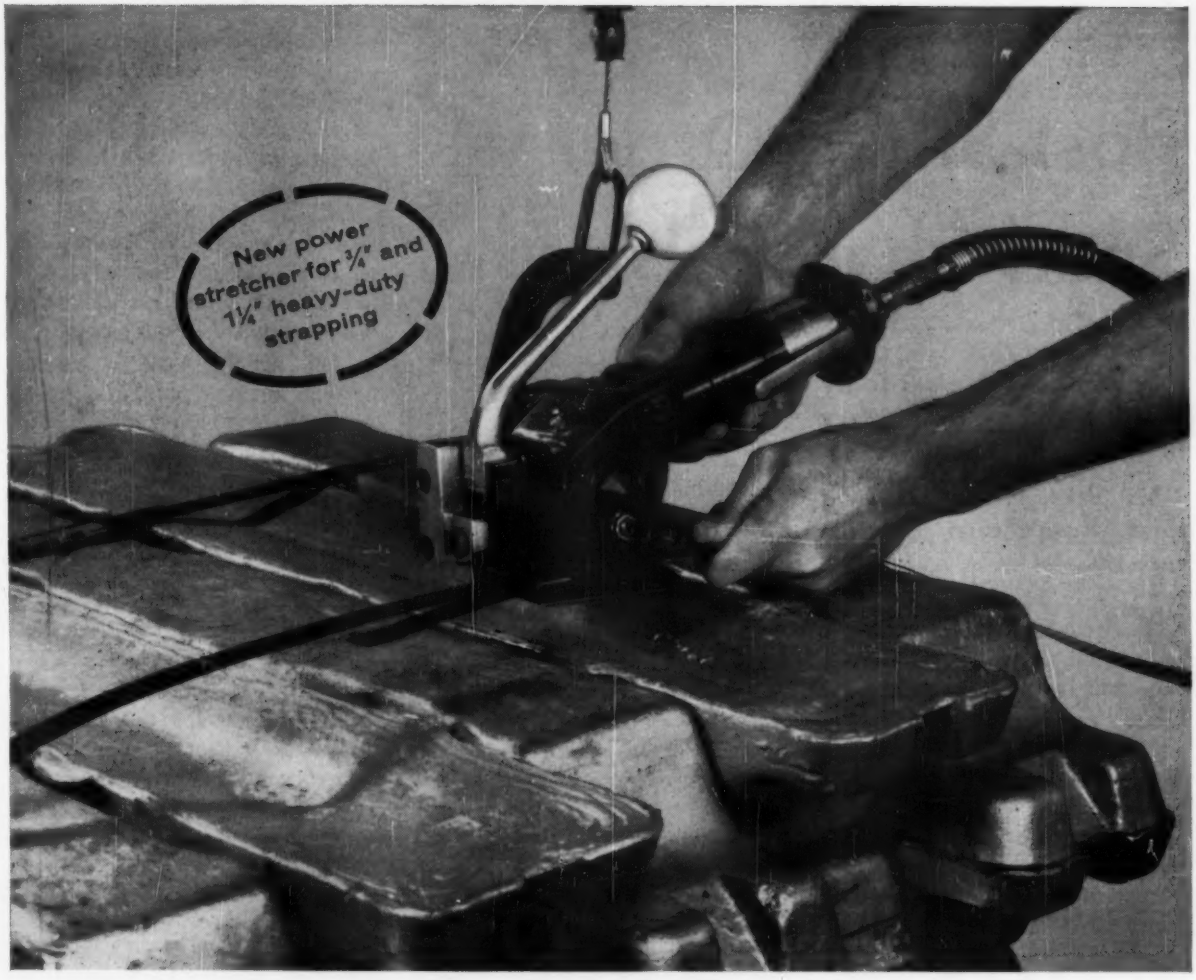
He warns against the use of too much customed designed and built furniture. The modular theory technique, he says, has been the vogue long enough for manufacturers to have learned to work with it. They can produce almost any shape, color, size or finish using standard or slightly modified parts at much less cost in dollars and office space.

Free Booklet—Mr. Nathan has put his thoughts regarding the subject into a booklet, "The Truth About Office Furniture," which he offers at no charge. It is available by writing Charles S. Nathan, Inc., 546 Broadway, New York 12, N. Y.

A new inovation on the office furniture horizon is the possibility of leasing furniture for office use.



MODERN LOOK: Custom designed and built office furniture combines beauty and utility. (Design for Business, Inc., Photo).



Another Acme Steel portable power strapping tool . . .

The new B1R pneumatic stretcher

ACME STEEL COMPANY adds still another model to its line of power-actuated, portable strapping tools. This time it's the rugged B1R Pneumatic Stretcher, an all-purpose tool for heavy-duty strapping—but with the accent on light weight and handling ease.

The B1R eliminates waste as it uses strap directly from the coil, features unlimited high-speed take-up and provides greater residual strap tension. Operation is simple: strapping threads easily into the tool, then a touch of the throttle power tensions strapping to predetermined tension. Motor holds tension until sealed joint is made. A forward stroke of the shear lever cuts strap close to the seal. This tool is readily adaptable to many different strapping applications. Mounting brackets and various types of supports are available.

Your Acme Idea Man can demonstrate the money-saving advantages of the B1R Stretcher as it applies to your packaging operations.

Ask your Acme Idea Man—or write—for free brochure on the new B1R and other Acme Steel powered strapping tools.

Contact your Acme Idea Man at the nearest Acme Steel Company office. Or write: Dept. IFU-89, Acme Steel Products Division, Acme Steel Company, Chicago 27, Illinois. In Canada, Acme Steel Company of Canada, Ltd., 743 Warden Ave., Toronto 13, Ontario.

ACME STEEL **STEEL STRAPPING**

Post-Strike Order Snarl Shapes Up

Mills are making plans to try to ease the post-strike delivery situation.

But producers will face a tough struggle catching up on commitments.

■ The troubles of steel users won't end when the strike does. They face one of the worst delivery snarls in history.

The real crisis will come when most mills begin operating again. "Then," says one steel sales manager, "everybody will want old orders changed and will place new ones to fit their altered needs. And they'll want the new orders filled quickly."

Even the mills not now operating are planning ahead so effects of the order bottleneck will be lessened. But most of the plans are filled with "ifs." Reason: No one knows when the strike will end or what condition order books will be in when it does.

Full Books—But this much is clear: Most mills which were struck had full order books for the third quarter. Only a part of July tonnage was shipped before the strike began. In addition, some of the mills had carryovers — backlogs which accumulated during May and June. All this steel must be shipped before any new orders can be processed.

In most cases, these mills are accepting but not entering new tonnages. Generally they will only promise shipment in a stated number of weeks after the strike. Some mills are not taking any fourth quarter business at all at the moment.

Fight Over-Booking — Even among mills which are now operating, mostly without backlogs, there's concern about future bookings. These producers are often limiting acceptance of orders for September and beyond. They don't want to wind up over-booked.

Other mills now producing are adjusting or cutting back on the tonnages they will take in the months ahead. They hope in this way to get schedules current as early as they can.

Tight Products—When the strike does end, there will be a tight supply problem in many products. Generally these are the products now in the shortest supply. They include: Cold-rolled and galvanized sheet, wide flange beams, and heavy plate. Cold-finished bars are in better supply although problems are showing up in the Midwest. Inventories of oil country goods are still in fairly good shape. Standard pipe supplies are holding up so far.

PURCHASING AGENT'S CHECKLIST

Government officials are taking second look at growing stockpile of strategic materials. Changes in planning may bring cuts of surplus amounts. P. 43

Coming pinch in steel supplies worries stampers. P. 45

Use of jet transports for freight should cut costs. P. 48

Service Centers — Nationwide spot shortages should not develop in distributor stocks until mid-September, according to the American Steel Warehouse Assn. Warehouse inventories are expected to decline at the rate of 150,000 to 200,000 tons a week. (When the strike began, distributors were estimated to have 3.7 million tons in stock—more than 1 million tons above inventories at start of the 1956 strike.)

On a national basis, service centers are operating within 5 pct of booming June business levels. Normally, there's a seasonal drop in July and August.

Midwest distributors are now getting in orders for mill-size quanities of sheet. Appliance makers, in particular, are interested in galvanized sheet. Pressure for electrical sheet is also getting stronger.

Tightest products at the warehouses are galvanized sheet, cold-rolled sheet, light plate, and wide flange beams.

At **Pittsburgh** the shortage in beams is starting to hold up construction work. When the strike began, one distributor there was able to supply 200 to 300-ton lots for complete jobs. Now the same supplier is having trouble meeting even fill-in requirements. Another warehouse specializing in structurals is allocating all tonnage.

Generally, plates and standard structurals are in more plentiful supply at warehouses. There are reports, however, that floor plates, are now in short supply.

Sheet—Some **Eastern** mills now on strike are taking new orders for delivery at nominal periods after the strike. Others are not accepting any fourth quarter orders so far. One sheet mill now producing is reducing the amount of available tonnage for coming months to get current on bookings.

A **Detroit**-area mill now operating is sold out through the balance of 1959 on hot and cold-rolled sheet and strip. This producer says customer inventories are not balanced.

COMPARISON OF PRICES

(Effective Aug. 25, 1959)

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price changes from previous week are shown by an asterisk (*).

	Aug. 25 1959	Aug. 18 1959	July 28 1959	Aug. 26 1958
Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	5.10¢	5.10¢	5.10¢	5.10¢
Cold-rolled sheets	6.275	6.275	6.275	6.275
Galvanized sheets (10 ga.)	6.875	6.875	6.875	6.875
Hot-rolled strip	5.10	5.10	5.10	5.10
Cold-rolled strip	7.425	7.425	7.425	7.425
Plate	5.30	5.30	5.30	5.32
Plates, wrought iron	13.55	13.55	13.55	13.55
Stainl's C-R strip (No. 302)	52.00	52.00	52.00	52.00
Tin and Terneplate: (per base box)				
Tinplate (1.50 lb.) cokes	$10.65	$10.65	$10.65	$10.30
Tin plates, electro (0.50 lb.)	9.35	9.35	9.35	9.00
Special coated mfg. ternes	9.90	9.90	9.90	9.55
Bars and Shapes: (per pound)				
Merchant bar	5.675¢	5.675¢	5.675¢	5.675¢
Cold finished bar	7.65	7.65	7.65	7.65
Alloy bar	6.725	6.725	6.725	6.725
Structural shapes	5.50	5.50	5.50	5.50
Stainless bars (No. 302)	46.75	46.75	46.75	45.00
Wrought iron bars	14.90	14.90	14.90	14.90
Wire: (per pound)				
Bright wire	8.00¢	8.00¢	8.00¢	8.00¢
Rails: (per 100 lb.)				
Heavy rails	$5.75	$5.75	$5.75	$5.525
Light rails	6.725	6.725	6.725	6.50
Semifinished Steel: (per net ton)				
Rerolling billets	$80.00	$80.00	$80.00	$80.00
Slabs, rerolling	80.00	80.00	80.00	80.00
Forging billets	99.50	99.50	99.50	99.50
Alloys, blooms, billets, slabs	119.00	119.00	119.00	119.00
Wire Rods and Skelp: (per pound)				
Wire rods	6.40¢	6.40¢	6.40¢	6.40¢
Skelp	5.05	5.05	5.05	5.05
Finished Steel Composite: (per pound)				
Base price	6.196¢	6.196¢	6.196¢	6.188¢

	Aug. 25 1959	Aug. 18 1959	July 28 1959	Aug. 26 1958
Pig Iron: (per gross ton)				
Foundry, del'd Phila.	$70.57	$70.57	$70.57	$70.97
Foundry, Southern Cin'ti	73.87	73.87	73.87	73.87
Foundry, Birmingham	62.50	62.50	62.50	62.50
Foundry, Chicago	66.50	66.50	66.50	66.50
Basic, del'd Philadelphia	70.07	70.07	70.07	70.47
Basic, Valley furnace	66.00	66.00	66.00	66.00
Malleable, Chicago	66.50	66.50	66.50	66.50
Malleable, Valley	66.50	66.50	66.50	66.50
Ferromanganese, 74-76 pct Mn, cents per lb‡	12.25	12.25	12.25	12.25
Pig Iron Composite: (per gross ton)				
Pig iron	$66.41	$66.41	$66.41	$66.49
Scrap: (per gross ton)				
No. 1 steel, Pittsburgh	$43.50	$43.50	$43.50	$44.50
No. 1 steel, Phila. area	39.50	39.50	39.50	38.50
No. 1 steel, Chicago	37.50*	36.50	35.50	44.50
No. 1 bundles, Detroit	36.50*	37.50	37.50	37.50
Low phos., Youngstown	45.50	45.50	44.50	46.50
No. 1 mach'y cast, Pittsburgh	52.50	52.50	52.50	51.50
No. 1 mach'y cast, Phila.	50.50	50.50	50.50	49.50
No. 1 mach'y cast, Chicago	60.50*	59.50	59.50	53.50
Steel Scrap Composite: (per gross ton)				
No. 1 hvy. melting scrap	$40.17*	$39.83	$39.50	$42.50
No. 2 bundles	27.67*	27.50	27.00	29.50
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt	$14.50-15.50	$14.50-15.50	$14.50-15.50	$14.50
Foundry coke, prompt	18.50	18.50	18.50	18-18.50
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electrolytic, Conn.	30.00	30.00	30.00	26.50
Copper, Lake, Conn.	30.00	30.00	30.00	26.50
Tin, Straits, N. Y.	103.00†	102.50	101.75	94.75
Zinc, East St. Louis	11.00	11.00	11.00	10.00
Lead, St. Louis	12.80	11.80	11.80	10.80
Aluminum, virgin ingot	26.80	26.80	26.80	26.80
Nickel, electrolytic	74.00	74.00	74.00	74.00
Magnesium, ingot	36.00	36.00	36.00	36.00
Antimony, Laredo, Tex.	29.50	29.50	29.50	29.50

† Tentative. ‡ Average. ** Revised.

Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo and Birmingham.

Steel Scrap Composites

Average of No. 1 heavy melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

INDEX TO PRICE PAGES

Prices At a Glance 111
Comparison of Prices 115
Bars 123
Billets, Blooms and Slabs 121
Boiler Tubes 125
Bolts, Nuts, Rivets, Screws 128
Clad Steel 125
Coke 125
Electrical Sheets 125
Electrodes 125
Electroplating Supplies 128
Ferroalloys 130
Iron Ore 128
Merchant Wire Products 125
Metal Powders 128
Nonferrous
- Mill Products 120
- Primary Prices 115-118-120
- Remelted Metals 120
- Scrap 120

Piling 121
Pig Iron 129
Pipe and Tubing 124
Plates 123
Rails 125
Refractories 125
Service Center Prices 128
Shapes 121
Sheets 122
Spring Steel 125
Stainless 129
Steel Scrap 117
Strip 121
Structurals 121
Tinplate 122
Tool Steel 125
Track Supplies 125
Water Pipe Index 128
Wire 123
Wire Rod 122

QUANTITY PRODUCTION OF GREY IRON CASTINGS

ONE OF THE NATION'S LARGEST AND MOST MODERN PRODUCTION FOUNDRIES

ESTABLISHED 1866
THE WHELAND COMPANY
CHATTANOOGA 2, TENN.

WARD STEEL CO.

PROMPT WAREHOUSE SERVICE ONLY
Most Complete Stock in America of
BLUE TEMPERED SPRING STEEL
We believe that the way to sell is to carry a stock which permits satisfying any reasonable warehouse demand.

878 Rindge Ave. Ext. Phone UN 4-2460
CAMBRIDGE 40, MASS.
Branch
3042-3058 W. 51st Street, CHICAGO, ILL.
Phone: Grovehill 6-2600

Scrap Prices Hold Despite Strike

Contrary to pre-strike expectations, the scrap market hasn't shown signs of weakening.

There are present markets for scrap at operating mills and foundries. And even better prospects for the future.

■ The scrap trade is holding tenaciously to its bullish attitude. Brokers and dealers anticipate a strong demand for scrap once the steel strike is settled. At the same time, the flow of scrap into many yards has slowed seasonally to a trickle. Vacations and new model changeovers in the automobile have reduced scrap production.

Some mills are buying scrap for delivery after they reopen. And many of the mills still operating are taking scrap on a regular basis. In Coast areas, the export market will be a factor in the market for at least another month.

These factors have combined in most areas to support prices near the same level as when the strike started. In some cases, prices have even gained strength in recent weeks —particularly in secondary steelmaking grades and foundry scrap. As long as the strike doesn't last too much longer, few dealers or brokers foresee anything more than minor changes in prices.

Pittsburgh—Dealer confidence in a strong post-strike market continues to grow. But mill men feel considerable industrial scrap has backed up in plants. Dealers are reluctant to lay it down, but a small post-strike price rise should bring it out. Mills have already lined up post-strike tonnages, of course, and where reasonable are making partial advance payments to dealers. Market activity is at a standstill for the present and some distress scrap has left town in small lots.

Chicago—Scrap movement continues to dwindle. Yard stocks are proving lower than had been estimated earlier. Some scrap producers are now holding up shipments of scrap not under contract, hoping for better post-strike prices, which has served to further reduce the amount of scrap moving to dealer-broker yards. Railroad list prices are again stronger. RR steel car axles were incorrectly listed at $66 to $67 in the Aug. 20 issue; correct price should have been $63 to $64.

Philadelphia — Outlook for the export market looks about the same for the next month, "but there's no zip to the domestic market," according to trade sources. One buyer of No. 2 bundles has reduced its price by $1 and opening a $2 spread in prices quoted for the grade.

New York—Scrap continues to move at going prices in this area—both export and some domestic. Volume could be larger but it is still high enough to maintain prices. Expected stainless export business hasn't materialized.

Detroit—The market is quiet, but there's no sign of pessimism. In fact, the over-all tone of the market is more bullish than a month ago, as dealers and brokers anticipate big orders once the strike is settled. But there does appear to be a greater willingness on the part of dealers to move scrap than there was 2 to 3 weeks ago.

Cleveland — Operating mills in the area will take distress scrap at lowered prices but aren't anxious for any shipments. Most have heavy inventories already. Auto list tonnages will be down due to model changeover. Prices should be equal to or slightly higher than this month. Underlying strength comes from a shortage of dealer scrap.

St. Louis—Scrap steel prices held about unchanged despite a very strong undertone. Activity remained about normal. Dealers seem to be holding back with hopes that prices will turn upward or that some special deals can be made at higher levels. Demand for premium grades is very good.

Cincinnati—The status is quo as mills aren't anxious for scrap and dealers won't ship at offered prices. Some out-of-district activity is adding strength to the area market, especially along the Ohio River.

Birmingham—A large pipe manufacturer has pulled out of the scrap market, easing the cast supply situation somewhat. Shortages continue in foundry and electric furnace steel scrap. An Atlanta mill bought limited quantities this week at unchanged prices.

Buffalo — Inactivity continues here and prices remain unchanged. Dealers expect few changes and are marking time until the steel strike ends.

Boston—A vacation calm covers the market, but export activity and dealer optimism toward post-strike market prospects keep a floor under prices.

West Coast—Prices in this district are steady and the export demand remains good. No. 1 cupola cast, showing strength, is up $2. Scrap collections, however, have slowed to a snail's pace.

Houston — Export continues to dominate the market with exporters quoting prices on mill grades from $1 to $5 above domestic prices. Mexico came into the market with a small order.

SCRAP PRICES *(Effective Aug. 25, 1959)*

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Pittsburgh

No. 1 hvy. melting	$43.00 to $44.00
No. 2 hvy. melting	34.00 to 35.00
No. 1 dealer bundles	44.00 to 45.00
No. 1 factory bundles	47.00 to 48.00
No. 2 bundles	29.00 to 30.00
No. 1 busheling	43.00 to 44.00
Machine shop turn.	20.00 to 21.00
Shoveling turnings	27.00 to 28.00
Cast iron borings	26.00 to 27.00
Low phos. punch'gs plate	47.00 to 48.00
Heavy turnings	35.00 to 36.00
No. 1 RR hvy. melting	44.00 to 45.00
Scrap rails, random lgth.	54.00 to 55.00
Rails 2 ft and under	58.00 to 59.00
RR specialties	53.00 to 54.00
No. 1 machinery cast.	52.00 to 53.00
Cupola cast.	46.00 to 47.00
Heavy breakable cast.	44.00 to 45.00
Stainless	
18-8 bundles and solids	230.00 to 235.00
18-8 turnings	115.00 to 120.00
430 bundles and solids	130.00 to 135.00
410 turnings	55.00 to 60.00

Chicago

No. 1 hvy. melting	$37.00 to $38.00
No. 2 hvy. melting	35.00 to 36.00
No. 1 dealer bundles	37.00 to 38.00
No. 1 factory bundles	42.50 to 43.50
No. 2 bundles	26.00 to 27.00
No. 1 busheling	37.00 to 38.00
Machine shop turn.	19.00 to 20.00
Mixed bor. and turn.	21.00 to 22.00
Shoveling turnings	21.00 to 22.00
Cast iron borings	21.00 to 22.00
Low phos. forge crops	51.00 to 52.00
Low phos. punch'gs plate, ¼ in. and heavier	49.00 to 50.00
Low phos. 2 ft and under	47.00 to 48.00
No. 1 RR hvy. melting	42.00 to 43.00
Scrap rails, random lgth.	52.00 to 53.00
Rerolling rails	62.00 to 63.00
Rails 2 ft and under	58.00 to 59.00
Angles and splice bars	53.00 to 54.00
RR steel car axles	63.00 to 64.00
RR couplers and knuckles	50.00 to 51.00
No. 1 machinery cast.	60.00 to 61.00
Cupola cast.	53.00 to 54.00
Cast iron wheels	44.00 to 45.00
Malleable	61.00 to 62.00
Stove plate	50.00 to 51.00
Steel car wheels	50.00 to 51.00
Stainless	
18-8 bundles and solids	210.00 to 215.00
18-8 turnings	110.00 to 115.00
430 bundles and solids	115.00 to 120.00
430 turnings	55.00 to 60.00

Philadelphia Area

No. 1 hvy. melting	$39.00 to $40.00
No. 2 hvy. melting	34.00 to 35.00
No. 1 dealer bundles	40.00 to 41.00
No. 2 bundles	26.00 to 28.00
No. 1 busheling	40.00 to 41.00
Machine shop turn.	19.00 to 20.00
Mixed bor. short turn.	19.00 to 20.00
Cast iron borings	19.00 to 20.00
Shoveling turnings	23.00 to 24.00
Clean cast. chem. borings	27.00 to 28.00
Low phos. 5 ft and under	43.00 to 44.00
Low phos. 2 ft punch'gs	44.00 to 45.00
Elec. furnace bundles	41.00 to 42.00
Heavy turnings	33.00 to 34.00
RR specialties	45.00 to 46.00
Rails 18 in. and under	59.00 to 60.00
Cupola cast.	40.00 to 41.00
Heavy breakable cast.	44.00 to 45.00
Cast iron car wheels	45.00 to 46.00
Malleable	67.00 to 68.00
No. 1 machinery cast.	50.00 to 51.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$35.50 to $36.50
No. 2 hvy. melting	29.50 to 30.50
No. 1 dealer bundles	35.50 to 36.50
No. 2 bundles	24.50 to 25.50
Machine shop turn.	16.00 to 17.00
Shoveling turnings	19.00 to 20.00
Cast iron borings	17.00 to 18.00
Low phos. 18 in. and under	45.00 to 46.00
Rails, random length	48.00 to 49.00
Rails, 18 in. and under	55.00 to 56.00
No. 1 cupola cast.	46.00 to 47.00
Hvy. breakable cast.	43.00 to 44.00
Drop broken cast.	53.00 to 54.00

Youngstown

No. 1 hvy. melting	$44.00 to $45.00
No. 2 hvy. melting	37.00 to 38.00
No. 1 dealer bundles	44.00 to 45.00
No. 2 bundles	27.50 to 28.50
Machine shop turn.	18.50 to 19.50
Shoveling turnings	23.50 to 24.50
Low phos. plate	45.00 to 46.00

Cleveland

No. 1 hvy. melting	$40.50 to $41.50
No. 2 hvy. melting	33.50 to 34.50
No. 1 dealer bundles	40.50 to 41.50
No. 1 factory bundles	44.50 to 45.50
No. 2 bundles	24.00 to 25.00
No. 1 busheling	40.50 to 41.50
Machine shop turn.	15.00 to 16.00
Mixed bor. and turn.	20.00 to 21.00
Shoveling turnings	20.00 to 21.00
Cast iron borings	20.00 to 21.00
Cut structural & plates, 2 ft & under	46.00 to 47.00
Drop forge flashings	40.50 to 41.50
Low phos. punch'gs plate	41.50 to 42.50
Foundry steel, 2 ft & under	40.00 to 41.00
No. 1 RR hvy. melting	44.00 to 45.00
Rails 2 ft and under	57.00 to 58.00
Rails 18 in. and under	58.00 to 59.00
Steel axle turnings	24.00 to 25.00
Railroad cast.	56.00 to 57.00
No. 1 machinery cast.	54.00 to 55.00
Stove plate	51.00 to 52.00
Malleable	67.00 to 68.00
Stainless	
18-8 bundles	215.00 to 225.00
18-8 turnings	115.00 to 120.00
430 bundles	115.00 to 120.00

Buffalo

No. 1 hvy. melting	$33.00 to $34.00
No. 2 hvy. melting	28.00 to 29.00
No. 1 busheling	33.00 to 34.00
No. 1 dealer bundles	33.00 to 34.00
No. 2 bundles	24.00 to 25.00
Machine shop turn.	16.00 to 17.00
Mixed bor. and turn.	17.00 to 18.00
Shoveling turnings	20.00 to 21.00
Cast iron borings	17.00 to 18.00
Low phos. plate	40.00 to 41.00
Structurals and plate, 2 ft and under	41.00 to 42.00
Scrap rails, random lgth.	39.00 to 40.00
Rails 2 ft and under	49.00 to 50.00
No. 1 machinery cast.	48.00 to 49.00
No. 1 cupola cast.	44.00 to 45.00

St. Louis

No. 1 hvy. melting	$33.00 to $34.00
No. 2 hvy. melting	31.00 to 32.00
No. 1 dealer bundles	39.00 to 40.00
No. 2 bundles	23.00 to 24.00
Machine shop turn.	15.00 to 16.00
Shoveling turnings	16.00 to 17.00
Cast iron borings	19.00 to 20.00
No. 1 RR hvy. melting	40.00 to 41.00
Rails, random lengths	46.00 to 47.00
Rails, 18 in. and under	51.00 to 52.00
Angles and splice bars	47.00 to 48.00
RR specialties	46.00 to 47.00
Cupola cast.	54.00 to 55.00
Heavy breakable cast.	42.00 to 43.00
Stove plate	44.00 to 45.00
Cast iron car wheels	42.00 to 43.00
Rerolling rails	58.00 to 59.00
Unstripped motor blocks	42.00 to 43.00

Birmingham

No. 1 hvy. melting	$35.00 to $36.00
No. 2 hvy. melting	28.00 to 29.00
No. 1 dealer bundles	35.00 to 36.00
No. 1 special bundles	38.00 to 39.00
No. 2 bundles	23.00 to 24.00
No. 1 busheling	38.00 to 39.00
Machine shop turn.	24.00 to 25.00
Shoveling turnings	27.00 to 28.00
Cast iron borings	14.00 to 15.00
Electric furnace bundles	38.00 to 39.00
Elec. furnace, 2 ft & under	36.00 to 37.00
Bar crops and plate	44.00 to 45.00
Structural and plate, 2 ft.	43.00 to 44.00
No. 1 RR hvy. melting	37.00 to 38.00
Scrap rails, random lgth.	46.00 to 47.00
Rails, 18 in. and under	52.00 to 53.00
Angles and splice bars	44.00 to 45.00
Rerolling rails	57.00 to 58.00
No. 1 cupola cast.	55.00 to 56.00
Stove plate	55.00 to 56.00
Cast iron car wheels	43.00 to 44.00
Unstripped motor blocks	42.00 to 43.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$31.00 to $32.00
No. 2 hvy. melting	27.00 to 28.00
No. 2 dealer bundles	20.00 to 21.00
Machine shop turnings	8.00 to 9.00
Mixed bor. and turn.	10.00 to 11.00
Shoveling turnings	12.00 to 13.00
Clean cast. chem. borings	22.00 to 23.00
No. 1 machinery cast.	37.00 to 38.00
Mixed yard cast.	35.00 to 36.00
Heavy breakable cast.	33.00 to 34.00
Stainless	
18-8 prepared solids	195.00 to 200.00
18-8 turnings	85.00 to 90.00
430 prepared solids	85.00 to 90.00
430 turnings	20.00 to 25.00

Detroit

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$34.00 to $35.00
No. 2 hvy. melting	25.00 to 26.00
No. 1 dealer bundles	36.00 to 37.00
No. 2 bundles	20.00 to 21.00
No. 1 busheling	35.00 to 36.00
Drop forge flashings	34.00 to 35.00
Machine shop turn.	13.00 to 14.00
Mixed bor. and turn.	15.00 to 16.00
Shoveling turnings	16.00 to 17.00
Cast iron borings	15.00 to 16.00
Heavy breakable cast.	36.00 to 37.00
Mixed cupola cast.	44.00 to 45.00
Automotive cast.	50.00 to 51.00
Stainless	
18-8 bundles and solids	190.00 to 200.00
18-8 turnings	80.00 to 90.00
430 bundles and solids	85.00 to 95.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$29.00 to $30.00
No. 2 hvy. melting	21.00 to 22.00
No. 1 dealer bundles	29.00 to 30.00
No. 2 bundles	14.00 to 15.00
No. 1 busheling	29.00 to 30.00
Machine shop turn.	8.50 to 9.00
Shoveling turnings	11.50 to 12.50
Clean cast. chem. borings	15.50 to 16.50
No. 1 machinery cast.	35.00 to 36.00
Mixed cupola cast.	36.00 to 37.00
Heavy breakable cast.	32.00 to 33.00
Stove plate	29.00 to 30.00

San Francisco

No. 1 hvy. melting	....	$36.00
No. 2 hvy. melting	....	33.00
No. 1 dealer bundles	....	33.00
No. 2 bundles	....	22.00
Machine shop turn.	....	17.00
Cast iron borings	....	17.00
No. 1 cupola cast.	....	47.00

Los Angeles

No. 1 hvy. melting	....	$38.00
No. 2 hvy. melting	....	36.00
No. 1 dealer bundles	....	33.00
No. 2 bundles	$18.00 to	20.00
Machine shop turn.	....	16.00
Shoveling turnings	....	18.00
Cast iron borings	....	18.00
Elec. furn. 1 ft and under (foundry)	47.00 to	48.00
No. 1 cupola cast.	46.00 to	47.00

Seattle

No. 1 hvy. melting	....	$35.00
No. 2 hvy. melting	....	33.00
No. 2 bundles	....	22.00
No. 1 cupola cast.	....	36.00
Mixed yard cast.	....	36.00

Hamilton, Ont.

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	....	$32.25
No. 2 hvy. melting	....	28.25
No. 1 dealer bundles	....	32.25
No. 2 bundles	....	22.75
Mixed steel scrap	....	24.25
Bush., new fact., prep'd.	....	32.25
Bush., new fact., unprep'd	....	26.25
Machine shop turn.	....	14.00
Short steel turn.	....	17.00
Mixed bor. and turn.	....	13.00
Rails, rerolling	....	37.00
Cast scrap	$46.50 to	48.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	....	$34.00
No. 2 hvy. melting	....	31.00
No. 2 bundles	....	20.00
Machine shop turn.	....	16.00
Shoveling turnings	....	20.00
Cut structural plate 2 ft & under	$45.00 to	46.00
Unstripped motor blocks	39.50 to	40.50
Cupola cast.	46.00 to	47.00
Heavy breakable cast.	29.00 to	30.00

Copper Seeks Own Wage Pattern

Copper industry doesn't want to be tied to the steel industry pattern, when it's reached.

Union and producers are far apart in initial negotiating. Users are well fixed.

▪ The copper industry is refusing to play follow-the-leader with steel. Despite some published speculation that settlement of the current copper strike must wait on a steel labor package, copper industry sources privately stress the opposite.

Producers feel they must stand on their feet, evolve labor contracts based on conditions in copper, not steel or some other industry.

75 Pct Out—Meanwhile, at mid-week, 75 pct of the primary copper producing capacity was idled by the International union of Mine, Mill & Smelter Workers. And early settlement of the strike seemed remote. Union heads were trying to work out bargaining goals so that negotiations could resume. Producers have indicated they feel that meeting with union negotiators at the present time would be futile until labor demands are greatly modified.

Kennecott, for example, has served notice that it considers present union demands as a threat to its right to manage. The company has refused to make a specific money offer because of the union's insistence that non-economic issues be settled first.

Spoke Too Soon—In an ironic situation, Mine-Mill has rejected in advance a Kennecott offer which the company does not intend to make. This is the package earlier rejected by United Steelworkers of America. This, Kennecott has little intention of offering to Mine-Mill. But Mine-Mill has characterized the USW package as "not enough for us."

Anaconda, meanwhile, is setting its face against wage boosts, offers an extension of present agreements with certain changes in work rules.

Inventories High—Copper users took the strike calmly. Inventories are high, probably average about 60 days, although spot shortages may show up sooner.

Since many customers use steel as well as copper, they see little point in worrying about one metal if they can't get the other. And copper is definitely subordinate in their thinking to steel at present. Indicative of customer tranquility was the stability of copper in world markets.

Lead

The Mine-Mill strike has also affected the lead industry. Walkout of 6000 workers at American Smelting & Refining Co. has idled almost 50 pct of domestic lead processing facilities. Largest producer, St. Joseph Lead Co., is not involved in current labor hassles, although Bunker Hill Co., second largest lead miner, faces expiration of a contract extension late this week.

Lead users are, if anything, even more serene than copper buyers. Supplies are high, and possibilities of a shortage seem very remote.

However, St. Joseph early this week boosted the price of lead 1¢ a lb to 13¢. The price increase was immediately followed up by other sellers.

The price had been at 12¢ since May 7, when it was boosted ½¢.

Aluminum

Primary aluminum producers set two new records in July, the Aluminum Assn. reports. Production of 179,194 net tons made July the all-time record month and helped set a new quarterly record of 486,-393 tons in the second period. Wear's total through July is a hefty 1,121,593 tons, against 881,102 tons for the same period last year.

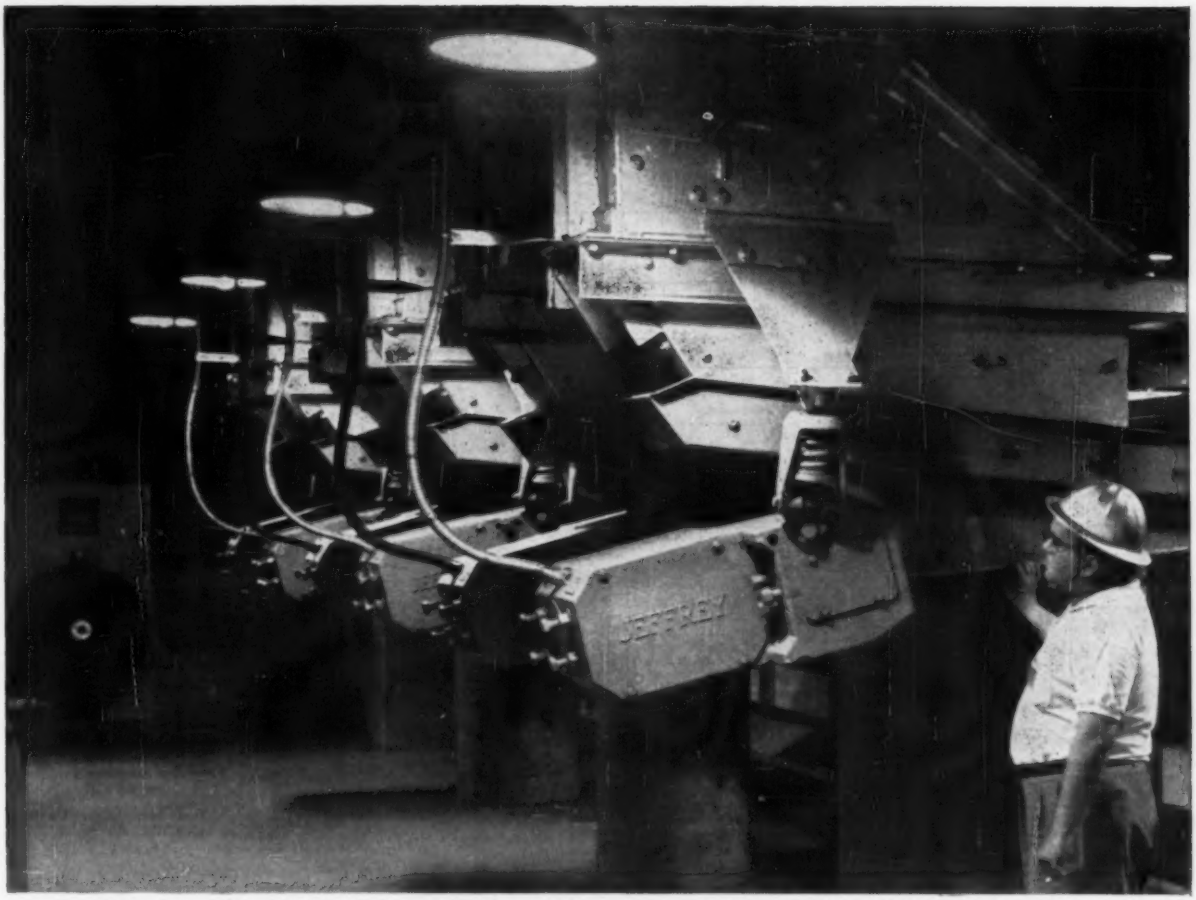
Reynolds Metals Co. reveals a promising new market for aluminum plate for tanks to transport liquefied methane gas. This could develop into a sizable market if methane prospects continue as bright as they look. Aluminum's strength properties at low temperatures make it well-suited for this use since liquefied methane gas is about minus 260°F.

Tin prices for the week: Aug. 19—102.50; Aug. 20—102.75; Aug. 21—102.875; Aug. 24—103.00; Aug. 25—103.00.*
*Estimate

Primary Prices

(cents per lb)	current price	last price	date of change
Aluminum pig	24.70	24.00	8/1/58
Aluminum ingot	26.80	26.10	8/1/58
Copper (E)	30.00	31.80	7/13/59
Copper (CS)	30.00	29.50	8/7/59
Copper (L)	30.00	31.50	7/13/59
Lead, St. L.	12.80	11.80	8/24/59
Lead, N. Y.	13.00	12.00	8/24/59
Magnesium ingot	36.00	34.50	6/13/58
Magnesium pig	35.25	33.75	6/13/58
Nickel	74.00	64.50	12/6/58
Titanium sponge	150-180	162-182	8/1/59
Zinc, E. St. L.	11.00	11.50	2/25/59
Zinc, N. Y.	11.50	12.00	2/25/59

ALUMINUM: 99% Ingot COPPER: (E) = electrolytic, (CS) = custom smelters, electrolytic. (L) = lake. LEAD: common grade. MAGNESIUM: 99.8% pig Velasco, Tex. NICKEL: Port Colborne, Canada. ZINC: prime western. TIN: See above; **Other primary prices, pg. 120.**



324 of these Type 4DTH feeders draw minus ¾" ore from surge bins, regulate 2,700 ton/hr. flow to 27 rod mills.

Where round-the-clock performance is a must...

Jeffrey feeders measure out 45 tons of Taconite every minute!

At this huge $300 million dollar plant, 372 Jeffrey vibrating feeders regulate the flow of flint-hard taconite to crushers and rod mills. Ore is crushed, separated and pelletized on a 24-hour, 365 days-per-year basis. Annual raw ore consumption is a staggering 22,500,000 tons.

Although the Jeffrey feeders at this plant are specially engineered, they are adaptations of standard designs, perfected through more than 25 years' experience in dealing with over 300 different solid materials.

Use Jeffrey's long experience and proved line of vibrating feeder equipment as an economic solution to your solid material handling problems. Write for Catalog 930—describes in detail the complete line of Jeffrey vibrating equipment, gives specific technical data, shows hundreds of applications.

Jeffrey vibrating equipment feeds, conveys, cools, drys, packs, screens, weighs solid materials roughly fitting these requirements:

Capacity	A few ounces to 2000 tons/hr.
Size	One micron to four-foot cubes
Density	4 lbs/cu. ft. to 400 lbs/cu. ft.
Moisture	Dripping wet to bone dry
Temperature	−30°F. to 2000°F.
Hardness	From wood flour and peat to abrasive grains and glass cullet

THE JEFFREY MANUFACTURING COMPANY

925 North Fourth Street • Columbus 16, Ohio

JEFFREY

CONVEYING • PROCESSING • MINING EQUIPMENT...TRANSMISSION MACHINERY...CONTRACT MANUFACTURING

NONFERROUS PRICES

MILL PRODUCTS

(Cents per lb unless otherwise noted)

ALUMINUM

(Base 30,000 lb, f.o.b. customer's plant)

Flat Sheet (Mill Finish and Plate)

("F" temper except 6061-0)

Alloy	.032	.081	.136 .249	.250-3.
1100, 3003	45.7	43.8	42.8	43.3
5052	53.1	48.4	46.9	46.0
6061-0	50.1	45.7	43.9	44.9

Extruded Solid Shapes

Factor	6063 T-5	6062 T-6
6- 8	42.7-44.2	51.1-54.8
12-14	42.7-44.2	52.0-56.5
24-26	43.2-44.7	62.8-67.5
36-38	46.7-49.2	86.9-90.5

Screw Machine Stock—2011-T-3

Size"	¾	⅝-⅞	¾-1	1¼-1½
Price	62.0	61.2	59.7	57.3

Roofing Sheet, Corrugated

(Per sheet, 26" wide base, 16,000 lb)

Length"→	72	96	120	144
.019 gage	$1.411	$1.884	$2.353	$2.823
.024 gage	1.762	2.349	2.937	3.524

MAGNESIUM

(F.o.b. shipping pt., carload frt. allowed)

Sheet and Plate

Type↓ Gage→	.250 3.00	.250-2.00	.188	.081	.032
AZ31B Stand. Grade	.....	67.9	69.0	77.9	103.1
AZ31B Spec.	.....	93.3	95.7	108.7	171.3
Tread Plate	.....	70.6	71.7	.....	.....
Tooling Plate	73.0	.....	.....	.....	.....

Extruded Shapes

factor→	6-8	12-14	24-26	36-38
Comm. Grade (AZ31C)	65.3	65.3	66.1	71.5
Spec. Grade (AZ31B)	84.6	85.7	90.6	104.2

Alloy Ingot

AZ91B (Die Casting) ..... 37.25 (delivered)
AZ63A, AZ92A, AZ91C (Sand Casting) 40.75 (Velasco, Tex.)

NICKEL, MONEL, INCONEL

(Base prices f.o.b. mill)

	"A" Nickel	Monel	Inconel
Sheet, CR	138	120	138
Strip, CR	124	108	138
Rod, bar, HR	107	89	109
Angles, HR	107	89	109
Plates, HR	130	110	126
Seamless tube	157	129	200
Shot, blocks	...	87	...

COPPER, BRASS, BRONZE

(Freight included in 5000 lbs)

	Sheet	Wire	Rod	Tube
Copper	54.13	.....	51.36	54.32
Brass, Yellow	47.24	47.78	47.18	50.65
Brass, Low	50.03	50.57	49.97	53.34
Brass, R L	51.02	51.56	50.96	54.33
Brass, Naval	51.90	.....	45.71	55.31
Munts Metal	49.95	.....	45.26	.....
Comm. Bs.	52.55	53.09	52.49	55.61
Mang. Bs.	55.64	.....	49.30	.....
Phos. Bs. 5%	73.92	.....	74.42	.....

Free Cutting Brass Rod 32.81

TITANIUM

(Base prices, f.o.b. mill)

Sheet and strip, commercially pure, $7.25-$8.50; alloy, $13.40-$17.00. Plate, HR, commercially pure, $5.25-$6.00; alloy, $8.00-$10.00. Wire, rolled and/or drawn, commercially pure, $5.75-$6.25; alloy, $7.75-$10.00; Bar, HR or forged, commercially pure, $4.25-$5.00; alloy, $4.25-$7.50; billets, HR, commercially pure, $3.55-$4.10; alloy, $3.55-$5.75.

PRIMARY METAL

(Cents per lb unless otherwise noted)

Antimony, American, Laredo, Tex.. 29.50
Beryllium Aluminum 5% Be, Dollar per lb contained Be $74.75
Beryllium copper, per lb conta'd Be. $43.00
Beryllium 97% lump or beads, f.o.b. Cleveland, Reading $71.50
Bismuth, ton lots ..... $ 2.25
Cadmium, del'd ..... $ 1.30
Calcium, 99.9% small lots ..... $ 4.55
Chromium, 99.8% metallic basis... $ 1.31
Cobalt, 97-99% (per lb) ... $1.75 to $1.82
Germanium, per gm, f.o.b. Miami, Okla., refined ..... 33.30 to 42.00
Gold, U. S. Treas., per troy oz..... $35.00
Indium, 99.9%, dollars per troy oz.. $ 2.25
Iridium, dollars per troy oz..... $75 to $85
Lithium, 98% ..... $11.00 to $14.00
Magnesium sticks, 100 to 500 lb.... 59.00
Mercury, dollars per 76-lb flask f.o.b. New York ..... $234 to $236
Nickel oxide sinter at Buffalo, N. Y., or other U. S. points of entry, contained nickel 69.60
Palladium, dollars per troy oz... $18 to $20
Platinum, dollars per troy oz... $77 to $80
Rhodium ..... $120.00 to $125.00
Silver ingots (¢ per troy oz.) 91.375
Thorium, per kg. $43.00
Vanadium ..... $ 3.45
Zirconium sponge ..... $ 5.00

REMELTED METALS

Brass Ingot

(Cents per lb delivered, carloads)

85-5-5 ingot
- No. 115 ..... 29.25
- No. 120 ..... 28.00
- No. 123 ..... 27.00

80-10-10 ingot
- No. 305 ..... 33.50
- No. 315 ..... 31.50

88-10-2 ingot
- No. 210 ..... 42.00
- No. 215 ..... 37.75
- No. 245 ..... 33.50

Yellow ingot
- No. 405 ..... 23.75

Manganese bronze
- No. 421 ..... 26.75

Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminum-silicon alloys
- 0.30 copper max. 25.00-25.25
- 0.60 copper max. 24.75-25.00

Piston alloys (No. 132 type)..26.75-27.75
No. 12 alum. (No. 2 grade)...23.50-24.00
108 alloy 24.00-24.50
195 alloy 26.50-27.50
13 alloy (0.60 copper max.)...24.75-25.00
AXS-679 (1 pct zinc) 23.75-24.75

Steel deoxidizing aluminum notch bar granulated or shot

Grade 1—95-97½% 24.00-25.00
Grade 2—92-95% 22.75-23.75
Grade 3—90-92% 21.75-22.75
Grade 4—85-90% 21.25-22.25

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1¢ per lb for shipments of 20,000 lb and over)

	Heavy	Turnings
Copper	26	25¼
Yellow brass	19⅝	17⅝
Red brass	22⅞	22⅛
Comm. bronze	23⅞	23⅛
Mang. bronze	18⅝	17½
Free cutting rod ends.	18¾	

Customs Smelters Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire 25¾
No. 2 copper wire 24¼
Light copper 22
*Refinery brass 23⅜
Copper bearing material 23
*Dry copper content.

Ingot Makers Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire 25¾
No. 2 copper wire 24
Light copper 22
No. 1 composition 21
No. 1 comp. turnings 20½
Hvy. yellow brass solids 15½
Brass pipe 15½
Radiators 16½

Aluminum

Mixed old cast. ..... 14 —15
Mixed new clips ..... 16½—17
Mixed turnings, dry ..... 14½—15½

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Copper and Brass

No. 1 copper wire ..... 23¾—24¼
No. 2 copper wire ..... 21¾—22¼
Light copper ..... 19¾—20¼
Auto radiators (unsweated). 13½—14
No. 1 composition ..... 17¾—18¼
No. 1 composition turnings.. 16¼—16¾
Cocks and faucets ..... 13¾—14¼
Clean heavy yellow brass ... 12¼—12½
Brass pipe ..... 13¾—14¼
New soft brass clippings .... 14¼—14¾
No. 1 brass rod turnings ... 11½—12

Aluminum

Alum. pistons and struts .... 7½— 8
Aluminum crankcase ..... 11¼—11¾
1100 (2s) aluminum clippings 15 —15½
Old sheet and utensils ..... 11¼—11¾
Borings and turnings ..... 7 — 7½
Industrial castings ..... 11¼—11¾
2020 (24S) clippings ..... 12½—13

Zinc

New zinc clippings ..... 4¾— 5¼
Old zinc ..... 3¼— 3½
Zinc routings ..... 2 — 2¼
Old die cast scrap ..... 1¾— 2

Nickel and Monel

Pure nickel clippings 52-54
Clean nickel turnings 40
Nickel anodes 52-54
Nickel rod ends 52-54
New Monel clippings 30-32
Clean Monel turnings 20-23
Old sheet Monel 26-28
Nickel silver clippings, mixed 18
Nickel silver turnings, mixed 15

Lead

Soft scrap lead ..... 8¾— 9¼
Battery plates (dry) ..... 4¼— 4½
Batteries, acid free ..... 2½— 2¾

Miscellaneous

Block tin ..... 77 —78
No. 1 pewter ..... 59 —60
Auto babbitt ..... 40 —41
Mixed common babbitt ..... 9¾—10¼
Solder joints ..... 14 —14½
Siphon tops 42
Small foundry type ..... 10¼—10¾
Monotype ..... 10¼—10¾
Lino. and stereotype ..... 9¼— 9¾
Electrotype ..... 7¾— 8¼
Hand picked type shells .... 6 — 6½
Lino. and stereo. dross ..... 2¾— 3¼
Electro dross ..... 2¾— 3¼

(Effective Aug. 24, 1959)

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BILLETS, BLOOMS, SLABS			PIL-ING	SHAPES STRUCTURALS			STRIP					
		Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton	Sheet Steel	Carbon	Hi Str. Low Alloy	Carbon Wide-Flange	Hot-rolled	Cold-rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot-rolled	Alloy Cold-rolled
EAST	Bethlehem, Pa.			$119.00 *B3*		5.55 *B3*	8.10 *B3*	5.55 *B5*						
	Buffalo, N. Y.	$80.00 *R3, B3*	$99.50 *R3, B3*	$119.00 *R3, B3*	6.50 *B3*	5.55 *B3*	8.10 *B3*	5.55 *B3*	5.10 *B3, R3*	7.425 *S10, R7*	7.575 *B3*			
	Phila., Pa.									7.875 *P15*				
	Harrison, N. J.													15.55 *C11*
	Conshohocken, Pa.		$104.50 *A2*	$126.00 *A2*					5.15 *A2*		7.575 *A2*			
	New Bedford, Mass.									7.875 *R6*				
	Johnstown, Pa.	$80.00 *B3*	$99.50 *B3*	$119.00 *B3*		5.55 *B3*	8.10 *B3*							
	Boston, Mass.									7.975 *T8*				
	New Haven, Conn.									7.875 *D1*				
	Baltimore, Md.									7.425 *T8*				15.90 *T8*
	Phoenixville, Pa.					5.55 *P2*		5.55 *P2*						
	Sparrows Pt., Md.								5.10 *B3*		7.575 *B3*			
	New Britain, Bridgeport, Wallingford, Conn.			$119.00 *N8*						7.875 *W1,S7*				
	Pawtucket, R. I. Worcester, Mass.									7.975 *N7, A5*				15.90 *N7* 15.70 *T8*
MIDDLE WEST	Alton, Ill.								5.30 *L1*					
	Ashland, Ky.								5.10 *A7*		7.575 *A7*			
	Canton-Massillon, Dover, Ohio		$102.00 *R3*	$119.00 *R3,* $114.00 *T5*						7.425 *G4*		10.80 *G4*		
	Chicago, Franklin Park, Evanston, Ill.	$80.00 *U1, R3*	$99.50 *U1, R3,W8*	$119.00 *U1, R3,W8*	6.50 *U1*	5.50 *U1, W8,P13*	8.05 *U1, Y1,W8*	5.50 *U1*	5.10 *W8, N4,A1*	7.525 *A1,T8, M8*	7.575 *W8*		8.40 *W8, S9,13*	15.55 *A1, S9,G4,T8*
	Cleveland, Ohio									7.425 *A5,J3*		10.75 *A5*	8.40 *J3*	
	Detroit, Mich.			$119.00 *R5*					5.10 *G3, M2*	7.425 *M2, S1, D1,P11*	7.575 *G3*	10.80 *S1*		
	Anderson, Ind.									7.425 *G4*				
	Gary, Ind. Harbor, Indiana	$80.00 *U1*	$99.50 *U1*	$119.00 *U1, Y1*		5.50 *U1, I3*	8.05 *U1, J3*	5.50 *I3*	5.10 *U1, I3,Y1*	7.425 *Y1*	7.575 *U1, I3,Y1*	10.90 *Y1*	8.40 *U1, Y1*	
	Sterling, Ill.	$80.00 *N4*				5.50 *N4*	7.75 *N4*	5.50 *N4*	5.20 *N4*					
	Indianapolis, Ind.									7.575 *R5*				15.70 *R5*
	Newport, Ky.								5.10 *A9*				8.40 *A9*	
	Niles, Warren, Ohio Sharon, Pa.		$99.50 *S1, C10*	$119.00 *C10,S1*					5.10 *R3, S1*	7.425 *R3, T4,S1*	7.575 *R3, S1*	10.80 *R3, S1*	8.40 *S1*	15.55 *S1*
	Owensboro, Ky.	$80.00 *G5*	$99.50 *G5*	$119.00 *G5*										
	Pittsburgh, Midland, Butler, Aliquippa, McKeesport, Pa.	$80.00 *U1, P6*	$99.50 *U1, C11,P6*	$119.00 *U1, C11,B7*	6.50 *U1*	5.50 *U1, J3*	8.05 *U1, J3*	5.50 *U1*	5.10 *P6*	7.425 *J3,B4* 7.525 *E3*			8.40 *S9*	15.55 *S9*
	Weirton, Wheeling, Follansbee, W. Va.				6.50 *U1, W3*	5.50 *W3*		5.50 *W3*	5.10 *W3*	7.425 *W3*	7.575 *W3*	10.80 *W3*		
	Youngstown, Ohio	$80.00 *R3*	$99.50 *Y1, C10*	$119.00 *Y1*			8.05 *Y1*		5.10 *U*	7.425 *Y1,R5*	7.575 *U1, Y1*	10.95 *Y1*	8.40 *U1, Y1*	15.55 *R5, Y1*
WEST	Fontana, Cal.	$90.50 *K1*	$109.00 *K1*	$140.00 *K1*		6.30 *K1*	8.85 *K1*	6.45 *K1*	5.825 *K1*	9.20 *K1*				
	Geneva, Utah		$99.50 *C7*			5.50 *C7*	8.05 *C7*							
	Kansas City, Mo.					5.60 *S2*	8.15 *S2*						8.65 *S2*	
	Los Angeles, Torrance, Cal.		$109.00 *B2*	$139.00 *B2*		6.20 *C7, B2*	8.75 *B2*		5.85 *C7, B2*	9.30 *C1,R5*			9.60 *B2*	17.75 *J3*
	Minnequa, Colo.					5.80 *C6*			6.20 *C6*	9.375 *C6*				
	Portland, Ore.					6.25 *O2*								
	San Francisco, Niles, Pittsburg, Cal.		$109.00 *B2*			6.15 *B2*	8.70 *B2*		5.85 *C7, B2*					
	Seattle, Wash.		$109.00 *B2*			6.25 *B2*	8.80 *B2*		6.10 *B2*					
SOUTH	Atlanta, Ga.					5.70 *A8*			5.10 *A8*					
	Fairfield, Ala. City, Birmingham, Ala.	$80.00 *T2*	$99.50 *T2*			5.50 *T2 R3,C16*	8.05 *T2*		5.10 *T2, R3,C16*		7.575 *T2*			
	Houston, Lone Star, Texas		$104.50 *S2*	$124.00 *S2*		5.60 *S2*	8.15 *S2*						8.65 *S2*	

(Effective Aug. 24, 1959)

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		SHEETS								WIRE ROD	TINPLATE†		
		Hot-rolled *18* ga. & hvyr.	Cold-rolled	Galvanized (Hot-dipped)	Enameling	Long Terne	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.		Coke* *1.25*-lb. base box	Electro** *0.25*-lb. base box	Holloware Enameling *29* ga.
EAST	Buffalo, N. Y.	5.10 *B3*	6.275 *B3*				7.525 *B3*	9.275 *B3*		6.40 *W6*	† Special coated mfg. terne deduct 35¢ from 1.25-lb. coke base box price, 0.75 lb. /0.25 lb. add 55¢. Can-making quality BLACKPLATE 55 to 128 lb. deduct $2.20 from 1.25 lb. coke base box. * COKES: 1.50-lb. add 25¢. **ELECTRO: 0.50-lb. add 25¢; 0.75-lb. add 65¢; 1.00-lb. add $1.00. Differential 1.00 lb./0.25 lb. add 65¢.		
	Claymont, Del.												
	Coatesville, Pa.												
	Conshohocken, Pa.	5.15 *A2*	6.325 *A2*				7.575 *A2*						
	Harrisburg, Pa.												
	Hartford, Conn.												
	Johnstown, Pa.									6.40 *B3*			
	Fairless, Pa.	5.15 *U1*	6.325 *U1*				7.575 *U1*	9.325 *U1*			$10.50 *U1*	$9.20 *U1*	
	New Haven, Conn.												
	Phoenixville, Pa.												
	Sparrows Pt., Md.	5.10 *B3*	6.275 *B3*	6.875 *B3*			7.525 *B3*	9.275 *B3*	10.025 *B3*	6.50 *B3*	$10.40 *B3*	$9.10 *B3*	
	Worcester, Mass.									6.70 *A5*			
	Trenton, N. J.												
MIDDLE WEST	Alton, Ill.									6.60 *L1*			
	Ashland, Ky.	5.10 *A7*		6.875 *A7*	6.775 *A7*		7.525 *A7*						
	Canton-Massillon, Dover, Ohio			6.875 *R1, R3*									
	Chicago, Joliet, Ill.	5.10 *W8, A1*					7.525 *U1, W8*			6.40 *A5, R3, W8*			
	Sterling, Ill.									6.50 *N4, K2*			
	Cleveland, Ohio	5.10 *R3, J3*	6.275 *R3, J3*	7.65 *R3**	6.775 *R3*		7.525 *R3, J3*	9.275 *R3, J3*		6.40 *A5*			
	Detroit, Mich.	5.10 *G3, M2*	6.275 *G3, M2*				7.525 *G3*	9.275 *G3*					
	Newport, Ky.	5.10 *A9*	6.275 *A9*										
	Gary, Ind. Harbor, Indiana	5.10 *U1, I3, Y1*	6.275 *U1, I3, Y1*	6.875 *U1, I3*	6.775 *U1, I3, Y1*	7.225 *U1*	7.525 *U1, Y1, I3*	9.275 *U1, Y1*		6.40 *Y1*	$10.40 *U1, Y1*	$9.10 *I3, U1, Y1*	7.85 *U1, Y1*
	Granite City, Ill.	5.20 *G2*	6.375 *G2*	6.975 *G2*	6.875 *G2*							$9.20 *G2*	7.95 *G2*
	Kokomo, Ind.			6.975 *C9*						6.50 *C9*			
	Mansfield, Ohio	5.10 *E2*	6.275 *E2*			7.225 *E2*							
	Middletown, Ohio		6.275 *A7*	6.875 *A7*	6.775 *A7*	7.225 *A7*							
	Niles, Warren, Ohio Sharon, Pa.	5.10 *R3, S1*	6.275 *R3*	6.875 *R3* 7.65 *R3**	6.775 *S1*	7.225 *S1**, *R3*	7.525 *R3, S1*	9.275 *R3,*				$9.10 *R3*	
	Pittsburgh, Midland, Butler, Donora, Aliquippa, McKeesport, Pa.	5.10 *U1, J3, P6*	6.275 *U1, J3, P6*	6.875 *U1, J3* 7.50 *E3**	6.775 *U1*		7.525 *U1, J3*	9.275 *U1, J3*	10.025 *U1, J3*	6.40 *A5, J3, P6*	$10.40 *U1, J3*	$9.10 *U1, J3*	7.85 *U1, J3*
	Portsmouth, Ohio	5.10 *P7*	6.275 *P7*							6.40 *P7*			
	Weirton, Wheeling, Follansbee, W. Va.	5.10 *W3, W5*	6.275 *W3, F3, W5*	6.875 *W3, W5* 7.50 *W3**		7.225 *W3, W5*	7.525 *W3*	9.275 *W3*			$10.40 *W5, W3*	$9.10 *W5, W3*	7.85 *W5*
	Youngstown, Ohio	5.10 *U1, Y1*	6.275 *Y1*	7.50 *J3**	6.775 *Y1*		7.525 *Y1*	9.275 *Y1*		6.40 *Y1*			
WEST	Fontana, Cal.	5.825 *K1*	7.40 *K1*				8.25 *K1*	10.40 *K1*			$11.05 *K1*	$9.75 *K1*	
	Geneva, Utah	5.20 *C7*											
	Kansas City, Mo.									6.65 *S2*			
	Los Angeles, Torrance, Cal.									7.20 *B2*			
	Minnequa, Colo.									6.65 *C6*			
	San Francisco, Niles, Pittsburg, Cal.	5.80 *C7*	7.225 *C7*	7.625 *C7*						7.20 *C7*	$11.05 *C7*	$9.75 *C7*	
SOUTH	Atlanta, Ga.												
	Fairfield, Ala. Alabama City, Ala.	5.10 *T2, R3*	6.275 *T2, R3*	6.875 *T2, R3*	6.775 *T2*					6.40 *T2, R3*	$10.50 *T2*	$9.20 *T2*	
	Houston, Texas									6.65 *S2*			

*Electrogalvanized sheets.

(Effective Aug. 24, 1959)

**7.425 at Sharon-Niles is 7.225

IRON AGE

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BARS						PLATES				WIRE
		Carbon† Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfr's. Bright
EAST	Bethlehem, Pa.				6.725 *B3*	9.025 *B3*	8.30 *B3*					
	Buffalo, N. Y.	5.675 *R3,B3*	5.675 *R3,B3*	7.70 *B5*	6.725 *B3,R3*	9.025 *B3,B5*	8.30 *B3*	5.30 *B3*				8.00 *W6*
	Claymont, Del.							5.30 *C4*		7.50 *C4*	7.95 *C4*	
	Coatesville, Pa.							5.30 *L4*		7.50 *L4*	7.95 *L4*	
	Conshohocken, Pa.							5.30 *A2*	6.375 *A2*	7.50 *A2*	7.95 *A2*	
	Harrisburg, Pa.							5.30 *P2*	6.375 *P2*			
	Milton, Pa.	5.825 *M7*	5.825 *M7*									
	Hartford, Conn.			8.15 *R3*		9.325 *R3*						
	Johnstown, Pa.	5.675 *B3*	5.675 *B3*		6.725 *B3*		8.30 *B3*	5.30 *B3*		7.50 *B3*	7.95 *B3*	8.00 *B3*
	Fairless, Pa.	5.825 *U1*	5.825 *U1*		6.875 *U1*							
	Newark, Camden, N. J.			8.10 *W10, P10*		9.20 *W10, P10*						
	Bridgeport, Putnam, Willimantic, Conn.			8.20 *W10* 8.15 *J3*	6.80 *N8*	9.175 *N8*						
	Sparrows Pt., Md.		5.675 *B3*					5.30 *B3*		7.50 *B3*	7.95 *B3*	8.10 *B3*
	Palmer, Worcester, Readville, Mansfield, Mass.			8.20 *B5, C14*		9.325 *A5,B5*						8.30 *A5, W6*
	Spring City, Pa.			8.10 *K4*		9.20 *K4*						
MIDDLE WEST	Alton, Ill.	5.875 *L1*										8.20 *L1*
	Ashland, Newport, Ky.							5.30 *A7,A9*		7.50 *A9*	7.95 *A7*	
	Canton, Massillon, Mansfield, Ohio	6.15* *R3*		7.65 *R3,R2*	6.725 *R3* 6.475 *T5*	9.025 *R3,R2* 8.775 *T5*		5.30 *E2*				
	Chicago, Joliet, Waukegan, Madison, Harvey, Ill.	5.675 *U1,R3, W8,N4,P13*	5.675 *U1,R3, N4,P13,W8* 5.875 *L1*	7.65 *A5, W10,W8, B5,L2,N9*	6.725 *U1,R3, W8*	9.025 *A5, W10,W8, L2,N8,B5*	8.30 *U1,W8, R3*	5.30 *U1,A1, W8,I3*	6.375 *U1*	7.50 *U1, W8*	7.95 *U1, W8*	8.00 *A5,R3, W8,N4, K2,W7*
	Cleveland, Elyria, Ohio	5.675 *R3*	5.675 *R3*	7.65 *A5,C13, C18*		9.025 *A5, C13,C18*	8.30 *R3*	5.30 *R3,J3*	6.375 *J3*		7.95 *R3,J3*	8.00 *A5, C13,C18*
	Detroit, Mich.	5.675 *G3*	5.675 *G3*	7.90 *P3* 7.85 *P8,B5* 7.65 *R5*	6.725 *R5,G3*	9.025 *R5* 9.225 *B5,P3, P8*	8.30 *G3*	5.30 *G3*		7.50 *G3*	7.95 *G3*	
	Duluth, Minn.											8.00 *A5*
	Gary, Ind. Harbor, Crawfordsville, Hammond, Ind.	5.675 *U1,I3, Y1*	5.675 *U1,I3, Y1*	7.65 *R2,J3*	6.725 *U1,I3, Y1*	9.025 *R3,M4*	8.30 *U1,Y1*	5.30 *U1,I3, Y1*	6.375 *J3, I1*	7.50 *U1, Y1*	7.95 *U1, Y1,I3*	8.10 *M4*
	Granite City, Ill.							5.40 *G2*				
	Kokomo, Ind.		5.775 *C9*									8.10 *C9*
	Sterling, Ill.	5.775 *N4*	5.775 *N4*					5.30 *N4*				8.10 *K2*
	Niles, Warren, Ohio Sharon, Pa.			7.65 *C10*	6.725 *C10,*	9.025 *C10*		5.30 *R3,S1*		7.50 *S1*	7.95 *R3, S1*	
	Owensboro, Ky.	5.675 *G5*			6.725 *G5*							
	Pittsburgh, Midland, Donora, Aliquippa, Pa.	5.675 *U1,J3*	5.675 *U1,J3*	7.65 *A5,B4, R3,J3,C11, W10,S9,C8, M9*	6.725 *U1,J3, C11,B7*	9.025 *A5, W10,R3,S9, C11,C8,M9*	8.30 *U1,J3*	5.30 *U1,J3*	6.375 *U1,J3*	7.50 *U1, J3,B7*	7.95 *U1, J3,B7*	8.00 *A5, J3,P6*
	Portsmouth, Ohio											8.00 *P7*
	Weirton, Wheeling, Follansbee, W. Va.							5.30 *W5*				
	Youngstown, Ohio	5.675 *U1,R3, Y1*	5.675 *U1,R3, Y1*	7.65 *A1,Y1, F2*	6.725 *U1,Y1*	9.025 *Y1,F2*	8.30 *U1,Y1*	5.30 *U1, R3,Y1*		7.50 *Y1*	7.95 *U1,Y1*	8.00 *Y1*
WEST	Emeryville, Fontana, Cal.	6.425 *J5* 6.375 *K1*	6.425 *J5* 6.375 *K1*		7.775 *K1*		9.00 *K1*	6.10 *K1*		8.30 *K1*	8.75 *K1*	
	Geneva, Utah							5.30 *C7*			7.95 *C7*	
	Kansas City, Mo.	5.925 *S2*	5.925 *S2*		6.975 *S2*		8.55 *S2*					8.25 *S2*
	Los Angeles, Torrance, Cal.	6.375 *C7,B2*	6.375 *C7,B2*	9.10 *R3,P14, S12*	7.775 *B2*	11.00 *P14, S12*	8.625 *B2*					8.95 *B2*
	Minnequa, Colo.	6.125 *C6*	6.125 *C6*					6.15 *C6*				8.25 *C6*
	Portland, Ore.	6.425 *O2*	6.425 *O2*									
	San Francisco, Niles, Pittsburg, Cal.	6.375 *C7* 6.425 *B2*	6.375 *C7* 6.425 *B2*				8.675 *B2*					8.95 *C7,C6*
	Seattle, Wash.	6.425 *B2,N6, A10*	6.425 *B2,A10*				8.675 *B2*	6.20 *B2*		8.40 *B2*	8.85 *B2*	
SOUTH	Atlanta, Ga.	5.875 *A8*	5.675 *A8*									8.00 *A8*
	Fairfield City, Ala. Birmingham, Ala.	5.675 *T2,R3, C16*	5.675 *T2,R3, C16*	8.25 *C16*			8.30 *T2*	5.30 *T2,R3*			7.95 *T2*	8.00 *T2,R3*
	Houston, Ft. Worth, Lone Star, Texas	5.925 *S2*	5.925 *S2*		6.975 *S2*		8.55 *S2*	5.40 *S2*		7.60 *S2*	8.05 *S2*	8.25 *S2*

† Merchant Quality—Special Quality 35¢ higher. (Effective Aug. 24, 1959) * Special Quality.

STEEL PRICES

Key to Steel Producers

With Principal Offices

A1 Acme Steel Co., Chicago
A2 Alan Wood Steel Co., Conshohocken, Pa.
A3 Allegheny Ludlum Steel Corp., Pittsburgh
A4 American Cladmetals Co., Carnegie, Pa.
A5 American Steel & Wire Div., Cleveland
A6 Angel Nail & Chaplet Co., Cleveland
A7 Armco Steel Corp., Middletown, Ohio
A8 Atlantic Steel Co., Atlanta, Ga.
A9 Acme-Newport Steel Co., Newport, Ky.
A10 Alaska Steel Mills, Inc., Seattle, Wash.

B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.
B2 Bethlehem Steel Co., Pacific Coast Div.
B3 Bethlehem Steel Co., Bethlehem, Pa.
B4 Blair Strip Steel Co., New Castle, Pa.
B5 Bliss & Laughlin, Inc., Harvey, Ill.
B6 Brook Plant, Wickwire-Spencer Steel Div., Birdsboro, Pa.
B7 A. M. Byers, Pittsburgh
B8 Braeburn Alloy Steel Corp., Braeburn, Pa.

C1 Calstrip Steel Corp., Los Angeles
C2 Carpenter Steel Co., Reading, Pa.
C4 Claymont Products Dept., Claymont, Del.
C6 Colorado Fuel & Iron Corp., Denver
C7 Columbia Geneva Steel Div., San Francisco
C8 Columbia Steel & Shafting Co., Pittsburgh
C9 Continental Steel Corp., Kokomo, Ind.
C10 Copperweld Steel Co., Pittsburgh, Pa.
C11 Crucible Steel Co. of America, Pittsburgh
C13 Cuyahoga Steel & Wire Co., Cleveland
C14 Compressed Steel Shafting Co., Readville, Mass.
C15 G. O. Carlson, Inc., Thorndale, Pa.
C16 Connors Steel Div., Birmingham
C18 Cold Drawn Steel Plant, Western Automatic Machine Screw Co., Elyria, O.

D1 Detroit Steel Corp., Detroit
D2 Driver, Wilbur B., Co., Newark, N. J.
D3 Driver Harris Co., Harrison, N. J.
D4 Dickson Weatherproof Nail Co., Evanston, Ill.

E1 Eastern Stainless Steel Corp., Baltimore
E2 Empire-Reeves Steel Corp., Mansfield, O.
E3 Enamel Products & Plating Co., McKeesport, Pa.

F1 Firth Sterling, Inc., McKeesport, Pa.
F2 Fitzsimons Steel Corp., Youngstown
F3 Follansbee Steel Corp., Follansbee, W. Va.

G2 Granite City Steel Co., Granite City, Ill.
G3 Great Lakes Steel Corp., Detroit
G4 Greer Steel Co., Dover, O.
G5 Green River Steel Corp., Owensboro, Ky.

H1 Hanna Furnace Corp., Detroit

I2 Ingersoll Steel Div., New Castle, Ind.
I3 Inland Steel Co., Chicago, Ill.
I4 Interlake Iron Corp., Cleveland

J1 Jackson Iron & Steel Co., Jackson, O.
J2 Jessop Steel Corp., Washington, Pa.
J3 Jones & Laughlin Steel Corp., Pittsburgh
J4 Joslyn Mfg. & Supply Co., Chicago
J5 Judson Steel Corp., Emeryville, Calif.

K1 Kaiser Steel Corp., Fontana, Calif.
K2 Keystone Steel & Wire Co., Peoria
K3 Koppers Co., Granite City, Ill.
K4 Keystone Drawn Steel Co., Spring City, Pa.

L1 Laclede Steel Co., St. Louis
L2 La Salle Steel Co., Chicago
L3 Lone Star Steel Co., Dallas
L4 Lukens Steel Co., Coatesville, Pa.

M1 Mahoning Valley Steel Co., Niles, O.
M2 McLouth Steel Corp., Detroit
M3 Mercer Tube & Mfg. Co., Sharon, Pa.
M4 Mid States Steel & Wire Co., Crawfordsville, Ind.
M6 Mystic Iron Works, Everett, Mass.
M7 Milton Steel Products Div., Milton, Pa.
M8 Mill Strip Products Co., Chicago, Ill.
M9 Moltrup Steel Products Co., Beaver Falls, Pa.

N1 National Supply Co., Pittsburgh
N2 National Tube Div., Pittsburgh
N4 Northwestern Steel & Wire Co., Sterling, Ill.
N6 Northwest Steel Rolling Mills, Seattle
N7 Newman Crosby Steel Co., Pawtucket, R. I.
N8 Carpenter Steel of New England, Inc., Bridgeport, Conn.
N9 Nelson Steel & Wire Co.

O1 Oliver Iron & Steel Co., Pittsburgh
O2 Oregon Steel Mills, Portland

P1 Page Steel & Wire Div., Monessen, Pa.
P2 Phoenix Steel Corp., Phoenixville, Pa.
P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
P4 Pittsburgh Coke & Chemical Co., Pittsburgh
P5 Pittsburgh Screw & Bolt Co., Pittsburgh
P6 Pittsburgh Steel Co., Pittsburgh
P7 Portsmouth Div., Detroit Steel Corp., Detroit
P8 Plymouth Steel Co., Detroit
P9 Pacific States Steel Co., Niles, Cal.
P10 Precision Drawn Steel Co., Camden, N. J.
P11 Production Steel Strip Corp., Detroit
P13 Phoenix Mfg. Co., Joliet, Ill.
P14 Pacific Tube Co.
P15 Philadelphia Steel and Wire Corp.

R1 Reeves Steel & Mfg. Div., Dover, O.
R2 Reliance Div., Eaton Mfg. Co., Massillon, O.
R3 Republic Steel Corp., Cleveland
R4 Roebling Sons Co., John A., Trenton, N. J.
R5 Jones & Laughlin Steel Corp., Stainless and Strip Div.
R6 Rodney Metals, Inc., New Bedford, Mass.
R7 Rome Strip Steel Co., Rome, N. Y.

S1 Sharon Steel Corp., Sharon, Pa.
S2 Sheffield Steel Div., Kansas City
S3 Shenango Furnace Co., Pittsburgh
S4 Simonds Saw and Steel Co., Fitchburg, Mass.
S5 Sweet's Steel Co., Williamsport, Pa.
S7 Stanley Works, New Britain, Conn.
S8 Superior Drawn Steel Co., Monaca, Pa.
S9 Superior Steel Div. of Copperweld Steel Co., Carnegie, Pa.
S10 Seneca Steel Service, Buffalo
S11 Southern Electric Steel Co., Birmingham
S12 Sierra Drawn Steel Corp., Los Angeles, Calif.
S13 Seymour Mfg. Co., Seymour, Conn.

T1 Tonawanda Iron Div., N. Tonawanda, N. Y.
T2 Tennessee Coal & Iron Div., Fairfield
T3 Tennessee Products & Chem. Corp., Nashville
T4 Thomas Strip Div., Warren, O.
T5 Timken Steel & Tube Div., Canton, O.
T7 Texas Steel Co., Fort Worth
T8 Thompson Wire Co., Boston

U1 United States Steel Corp., Pittsburgh
U2 Universal-Cyclops Steel Corp., Bridgeville, Pa.
U3 Ulbrich Stainless Steels, Wallingford, Conn.
U4 U. S. Pipe & Foundry Co., Birmingham

W1 Wallingford Steel Co., Wallingford, Conn.
W2 Washington Steel Corp., Washington, Pa.
W3 Weirton Steel Co., Weirton, W. Va.
W4 Wheatland Tube Co., Wheatland, Pa.
W5 Wheeling Steel Corp., Wheeling, W. Va.
W6 Wickwire Spencer Steel Div., Buffalo
W7 Wilson Steel & Wire Co., Chicago.
W8 Wisconsin Steel Div., S. Chicago, Ill.
W9 Woodward Iron Co., Woodward, Ala.
W10 Wyckoff Steel Co., Pittsburgh
W12 Wallace Barnes Steel Div., Bristol, Conn.

Y1 Youngstown Sheet & Tube Co., Youngstown, O.

PIPE AND TUBING

Base discounts (pct) f.o.b. mills. Base price about $200 per net ton.

STANDARD T. & C.	BUTTWELD														SEAMLESS							
	½ In.		¾ In.		1 In.		1¼ In.		1½ In.		2 In.		2½-3 In.		2 In.		2½ In.		3 In.		3½-4 In.	
	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.
Sparrows Pt. *B3*	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50	.....	.....	.....	.....	.....	.....	.....	.....
Youngstown *R3*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	.....	.....	.....	.....	.....	.....	.....	.....
Fontana *K1*	*10.75	*26.00	*7.75	*22.00	*4.25	*17.50	*1.75	*16.75	*1.25	*15.75	*0.75	*15.25	0.75	*15.50	.....	.....	.....	.....	.....	.....	.....	.....
Pittsburgh *J3*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
Alton, Ill. *L1*	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50	.....	.....	.....	.....	.....	.....	.....	.....
Sharon *M3*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	.....	.....	.....	.....	.....	.....	.....	.....
Fairless *N2*	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50	.....	.....	.....	.....	.....	.....	.....	.....
Pittsburgh *N1*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
Wheeling *W5*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	.....	.....	.....	.....	.....	.....	.....	.....
Wheatland *W4*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	.....	.....	.....	.....	.....	.....	.....	.....
Youngstown *Y1*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
Indiana Harbor *Y1*	1.25	*14.0	4.25	*10.0	7.75	*5.50	10.25	*4.75	10.75	*3.75	11.25	*3.25	12.75	*3.50	.....	.....	.....	.....	.....	.....	.....	.....
Lorain *N2*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
EXTRA STRONG PLAIN ENDS																						
Sparrows Pt. *B3*	4.75	*9.0	8.75	*5.0	11.75	*0.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50	.....	.....	.....	.....	.....	.....	.....	.....
Youngstown *R3*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	.....	.....	.....	.....	.....	.....	.....	.....
Fairless *N2*	4.75	*9.0	8.75	*5.0	11.75	*0.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50	.....	.....	.....	.....	.....	.....	.....	.....
Fontana *K1*	*6.25	.....	*2.25	.....	0.75	.....	1.25	.....	1.75	.....	2.25	.....	2.75	.....	.....	.....	.....	.....	.....	.....	.....	.....
Pittsburgh *J3*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50
Alton, Ill. *L1*	4.75	*9.0	8.75	*5.0	11.75	*0.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50	.....	.....	.....	.....	.....	.....	.....	.....
Sharon *M3*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	.....	.....	.....	.....	.....	.....	.....	.....
Pittsburgh *N1*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50
Wheeling *W5*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	.....	.....	.....	.....	.....	.....	.....	.....
Wheatland *W4*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	.....	.....	.....	.....	.....	.....	.....	.....
Youngstown *Y1*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50
Indiana Harbor *Y1*	5.75	*8.0	9.75	*4.0	12.75	0.50	13.25	*0.75	13.75	0.25	14.25	0.75	14.75	*0.50	.....	.....	.....	.....	.....	.....	.....	.....
Lorain *N2*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50

Threads only, buttweld and seamless, 2¼ pt. higher discount. Plain ends, buttweld and seamless, 3-in. and under, 5½ pt. higher discount.
Galvanized discounts based on zinc price range of over 9¢ to 11¢ per lb. East St. Louis. For each 2¢ change in zinc, discounts vary as follows: ½, ¾ and 1-in., 2 pt.; 1¼, 1½ and 2-in., 1½ pt.; 2½ and 3-in., 1 pt., e.g., zinc price range of over 13¢ to 15¢ would lower discounts on 2½ and 3-in. pipe by 2 points; zinc price in range over 7¢ to 9¢ would increase discounts. East St. Louis zinc price now 11.00¢ per lb.

(Effective Aug. 24, 1959)

TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	per lb	SAE
18	4	1	—	—	$1.84	T-1
18	4	1	—	5	2.545	T-4
18	4	2	—	—	2.005	T-2
1.5	4	1.5	8	—	1.20	M-1
6	4	3	6	—	1.59	M-3
6	4	2	5	—	1.345	M-2
High-carbon chromium					.955	D-3, D-5
Oil hardened manganese					.505	O-2
Special carbon					.38	W-1
Extra carbon					.38	W-1
Regular carbon					.325	W-1

Warehouse prices on and east of Mississippi are 4¢ per lb higher. West of Mississippi, 6¢ higher.

CLAD STEEL

Base prices, cents per lb f.o.b.

	Cladding	Plate (*L4, C4, A3, J2*) 10 pct	Plate (*L4, C4, A3, J2*) 15 pct	Plate (*L4, C4, A3, J2*) 20 pct	Sheet (*I2*) 20 pct
Stainless Type	302	.....	.....	.....	37.50
	304	28.80	31.55	34.30	40.00
	316	42.20	46.25	50.25	58.75
	321	34.50	37.75	41.05	47.25
	347	40.80	44.65	48.55	57.00
	405	24.60	26.90	29.25	.....
	410	22.70	24.85	27.00	.....
	430	23.45	25.65	27.90	.....

CR Strip (S9) Copper, 10 pct, 2 sides, 42.50; 1 side, 35.85.

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Tie Plates	Track Bolts Untreated
Bessemer *U1*	5.75	6.725	7.25	.....	.....	.....
Cleveland *R3*	.....	.....	.....	.....	.....	15.35
So. Chicago *R3*	.....	.....	.....	10.10	.....	.....
Ensley *T2*	5.75	6.725	.....	.....	.....	.....
Fairfield *T2*	.....	6.725	.....	10.10	6.875	.....
Gary *U1*	5.75	.....	.....	.....	6.875	.....
Huntington, *C16*	.....	6.725	.....	.....	.....	.....
Ind. Harbor *I3*	.....	.....	.....	10.10	.....	.....
Johnstown *B3*	.....	6.725	.....	.....	.....	.....
Joliet *U1*	.....	.....	7.25	.....	.....	.....
Kansas City *S2*	.....	.....	.....	10.10	.....	15.35
Lackawanna *B3*	5.75	6.725	7.25	.....	6.875	.....
Lebanon *B3*	.....	.....	7.25	.....	.....	15.35
Minnequa *C6*	5.75	7.225	7.25	10.10	6.875	15.35
Pittsburgh *P5*	.....	.....	.....	.....	.....	14.75
Pittsburgh *J3*	.....	.....	.....	10.10	.....	.....
Seattle *B2*	.....	.....	.....	.....	6.75	15.85
Steelton *B3*	5.75	.....	7.25	.....	6.875	.....
Struthers *Y1*	.....	.....	.....	10.10	.....	.....
Torrance *C7*	.....	.....	.....	.....	6.75	.....
Williamsport *S5*	.....	6.725	.....	.....	.....	.....
Youngstown *R3*	.....	.....	.....	10.10	.....	.....

COKE

	Net-Ton
Furnace, beehive (f.o.b.) Connellsville, Pa.	$14.50 to $15.50
Foundry, beehive (f.o.b.)	$18.50
Foundry oven coke	
Buffalo, del'd	$33.25
Detroit f.o.b.	32.00
New England, del'd	33.55
New Haven, f.o.b.	31.00
Kearney, N. J., f.o.b.	31.25
Philadelphia, f.o.b.	31.00
Swedeland, Pa., f.o.b.	31.00
Painesville, Ohio, f.o.b.	34.35
Erie, Pa., f.o.b.	32.00
Cleveland, del'd	34.19
Cincinnati, del'd	32.84
St. Paul, f.o.b.	31.25
St. Louis, f.o.b.	33.00
Birmingham, f.o.b.	30.35
Milwaukee, f.o.b.	32.00
Neville Is., Pa.	30.75

LAKE SUPERIOR ORES

51.50% Fe natural, delivered lower Lake ports. Interim prices for 1959 season. Freight changes for seller's account.

	Gross Ton
Openhearth lump	$12.70
Old range, bessemer	11.85
Old range, nonbessemer	11.70
Mesabi, bessemer	11.60
Mesabi, nonbessemer	11.45
High phosphorus	11.45

ELECTRICAL SHEETS

22-Gage F.o.b. Mill Cents Per Lb	Hot-Rolled (Cut Lengths)*	Cold-Reduced (Coiled or Cut Length) Semi-Processed	Cold-Reduced (Coiled or Cut Length) Fully Processed
Field	.....	9.875	.....
Armature	11.70	11.20	11.70
Elect.	12.40	11.90	12.40
Special Motor	.....	12.475	.....
Motor	13.55	13.05	13.55
Dynamo	14.65	14.15	14.65
Trans. 72	15.70	15.20	15.70
Trans. 65	16.30		
		Grain Oriented	
Trans. 58	16.80	Trans. 80	19.70
Trans. 52	17.85	Trans. 73	20.20
		Trans. 66	20.70

Producing points: Aliquippa (*J3*); Beech Bottom (*W5*); Brackenridge (*A3*); Granite City (*G2*); Indiana Harbor (*I3*); Mansfield (*E2*); Newport, Ky. (*A9*); Niles, O. (*S1*); Vandergrift (*U1*); Warren, O. (*R3*); Zanesville, Butler (*A7*).

ELECTRODES

Cents per lb. f.o.b. plant, threaded, with nipples, unboxed.

GRAPHITE Diam. (In.)	GRAPHITE Length (In.)	GRAPHITE Price	CARBON* Diam. (In.)	CARBON* Length (In.)	CARBON* Price
24	84	27.25	40	100,110	12.50
20	72	26.50	35	110	11.20
18	72	27.50	30	110	11.70
14	72	27.25	24	72	11.95
12	72	28.25	20	90	11.55
10	60	29.50	17	72	12.10
10	48	30.00	14	72	12.55
7	60	29.75	10	60	13.80
6	60	33.25	8	60	14.25
4	40	37.00			
3	40	39.25			
2½	30	41.50			
2	24	64.00			

* Prices shown cover carbon nipples.

REFRACTORIES

Fire Clay Brick

Carloads per 1000

Super duty, Mo., Pa., Md., Ky.	$185.00
High duty (except Salina, Pa., add $5.00)	140.00
Medium duty	125.00
Low duty (except Salina, Pa., add $2.00)	103.00
Ground fire clay, net ton, bulk	22.50

Silica Brick

Mt. Union, Pa., Ensley, Ala.	$158.00
Childs, Hays, Latrobe, Pa.	163.00
Chicago District	168.00
Western Utah	183.00
California	165.00
Super Duty Hays, Pa., Athens, Tex., Windham, Warren, O., Morrisville	163.00-168.00
Silica cement, net ton, bulk, Latrobe	29.75
Silica cement, net ton, bulk, Chicago	26.75
Silica cement, net ton, bulk, Ensley, Ala.	27.75
Silica cement, net ton, bulk, Mt. Union	25.75
Silica cement, net ton, bulk, Utah and Calif.	39.00

Chrome Brick

Per net ton

Standard chemically bonded, Balt.	$109.00
Standard chemically bonded, Curtiner, Calif.	119.00
Burned, Balt.	103.00

Magnesite Brick

Standard, Baltimore	$140.00
Chemically bonded, Baltimore	119.00

Grain Magnesite

St. ⅝ to ½-in. grains

Domestic, f.o.b. Baltimore in bulk.	$73.00
Domestic, f.o.b. Chewalah, Wash., Luning, Nev. in bulk	46.00
in sacks	52.00-54.00

Dead Burned Dolomite

Per net ton

F.o.b. bulk, producing points in:	
Pa., W. Va., Ohio	$16.75
Missouri Valley	15.60
Midwest	17.00

(Effective Aug. 24, 1959)

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard Q Coated Nails Col	Woven Wire Fence Col	"T" Fence Posts Col	Single Loop Bale Ties Col	Galv. Barbed and Twisted Barbless Wire Col	Merch. Wire Ann'ld ¢/lb.	Merch. Wire Galv. ¢/lb.
Alabama City *R3*	173	187	...	212	193	9.00	9.55
Aliquippa *J3***	173	190	...	...	190	9.00	9.675
Atlanta *A8***	175	192	...	214	198	8.75	9.425
Bartonville *K2***	175	192	178	214	198	9.10	9.775
Buffalo *W6*	.....	.....	.....	.....	.....	9.00	9.55*
Chicago *N4***	177	190	172	212	196	9.00	9.70
Chicago *R3*	.....	.....	.....	.....	.....	9.00	9.55
Cleveland *A6*	.....	.....	.....	.....	.....	.....	.....
Cleveland *A5*	.....	.....	.....	.....	.....	9.00	.....
Crawf'dsv. *M4***	175	192	...	214	198	9.10	9.775
Donora, Pa. *A5*	173	187	...	212	193	9.00	9.55
Duluth *A5*	173	187	...	212	193	9.00	9.55
Fairfield, Ala. *T2*	173	187	...	212	193	9.00	9.55
Galveston *D4*	9.10‡	.....	.....	.....	.....	.....	.....
Houston *S2*	178	192	...	217	198	9.25	9.80†
Jacksonville *M4*	184-1	197	...	219	203	9.10	9.775
Johnstown *B3***	173	190	174	...	196	9.00	9.675
Joliet, Ill. *A5*	173	187	...	212	193	9.00	9.55
Kokomo *C9*	175	189	...	214	195*	9.10	9.65*
L. Angeles *B2****	.....	.....	.....	.....	.....	9.95	10.625
Kansas City *S2**	178	192	...	217	198*	9.25	9.80†
Minnequa *C6*	178	192	182	217	198†	9.25	9.80†
Monessen *P6*	.....	.....	.....	.....	193	8.65	9.325
Palmer, Mass. *W6*	.....	.....	.....	.....	.....	9.30	9.85*
Pittsburg, Cal. *C7*	192	210	...	...	213	9.60	10.15
Rankin, Pa. *A5*	173	187	...	...	193	9.00	9.55
So. Chicago *R3*	173	187	...	...	193	8.65	9.20
S. San Fran. *C6*	.....	.....	.....	236	.....	9.95	10.50†
Sparrows Pt. *B3***	175	.....	.....	214	198	9.10	9.775
Struthers, O. *Y1**	.....	.....	.....	.....	.....	8.65	9.20
Worcester *A5*	179	.....	.....	.....	.....	9.30	9.85
Williamsport *S5*	.....	.....	.....	.....	.....	.....	.....

* Zinc less than .10¢. *** .10¢ zinc.
** 11-12¢ zinc. † Plus zinc extras.
‡ Wholesalers only.

C-R SPRING STEEL

Cents Per Lb F.o.b. Mill	CARBON CONTENT 0.26-0.40	0.41-0.60	0.61-0.80	0.81-1.05	1.06-1.35
Anderson, Ind. *G4*	8.95	10.40	12.60	15.60	18.55
Baltimore, Md. *T8*	9.50	10.70	12.90	15.90	18.85
Bristol, Conn. *W12*	.....	10.70	12.90	16.10	19.30
Boston *T8*	9.50	10.70	12.90	15.90	18.85
Buffalo, N. Y. *R7*	8.95	10.40	12.60	15.60	18.55
Carnegie, Pa. *S9*	8.95	10.40	12.60	15.60	18.55
Chicago	.....	.....	.....	15.60	.....
Cleveland *A5*	8.95	10.40	12.60	15.60	18.55
Dearborn *S1*	9.05	10.50	12.70	.....	.....
Detroit *D1*	9.05	10.50	12.70	15.70	.....
Detroit *D2*	9.05	10.50	12.70	.....	.....
Dover, O. *G4*	8.95	10.40	12.60	15.60	18.55
Evanston, Ill. *M8*	9.05	10.40	12.60	.....	.....
Franklin Park, Ill. *T8*	9.05	10.40	12.60	15.60	18.55
Harrison, N. J. *C11*	.....	.....	12.90	16.10	19.30
Indianapolis *R5*	9.10	10.55	12.60	15.60	18.55
Los Angeles *C1*	11.15	12.60	14.80	17.80	.....
New Britain, Conn. *S7*	9.40	10.70	12.90	15.90	18.85
New Castle, Pa. *B4*	8.95	10.40	12.60	15.60	.....
New Haven, Conn. *D1*	9.40	10.70	12.90	15.90	.....
Pawtucket, R. I. *N7*	9.50	10.70	12.90	15.90	18.85
Riverdale, Ill. *A1*	9.05	10.40	12.60	15.60	18.55
Sharon, Pa. *S1*	8.95	10.40	12.60	15.60	18.55
Trenton, *R4*	.....	10.70	12.90	16.10	19.30
Wallingford *W1*	9.40	10.70	12.90	15.90	18.55
Warren, Ohio *T4*	8.95	10.40	12.60	15.60	18.75
Worcester, Mass. *A5*	9.50	10.70	12.90	15.90	18.85
Youngstown *R5*	9.10	10.55	12.60	15.60	18.55

BOILER TUBES

$ per 100 ft. carload lots cut 10 to 24 ft. F.o.b. Mill	Size OD-In.	Size B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
Babcock & Wilcox	2	13	40.28	47.21	35.74
	2½	12	54.23	63.57	48.13
	3	12	62.62	73.40	55.59
	3½	11	73.11	85.70	65.84
	4	10	97.08	113.80	88.10
National Tube	2	13	40.28	47.21	35.74
	2½	12	54.23	63.57	48.13
	3	12	62.62	73.40	55.59
	3½	11	73.11	85.70	65.84
	4	10	97.08	113.80	88.10
Pittsburgh Steel	2	13	40.28	47.21	.....
	2½	12	54.23	63.57	.....
	3	12	62.62	73.40	.....
	3½	11	73.11	85.70	.....
	4	10	97.08	113.80	.....

integrated CRUCIBLE steel service

Crucible inside account salesmen (1) simplify ordering and expedite deliveries of the steels you need, (2) arrange for handling extra services, (3) supply you with basic steel and metalworking data.

staffs 32 local warehouses with specialized personnel to solve your specialty steel problems

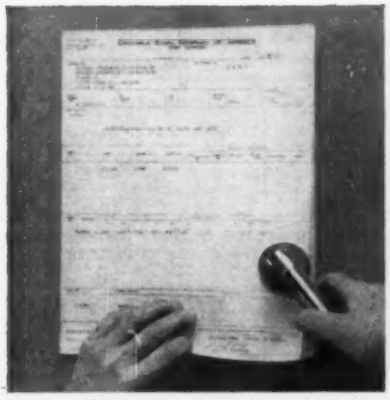
"We frequently rely on Crucible warehouse people," says one of our good customers. "We've found they can sometimes show us more economical steels, sizes and methods than those we're using. Furthermore, they give us valuable help with steels we're using for the first time."

This steel buyer, like thousands of others, believes in getting services with the steels he buys. Here's what he gets:

Crucible inside account salesmen help him simplify ordering, speed up his deliveries. They can efficiently arrange for extra services, such as forging, slitting, grinding and polishing, because of their special training at Crucible mills.

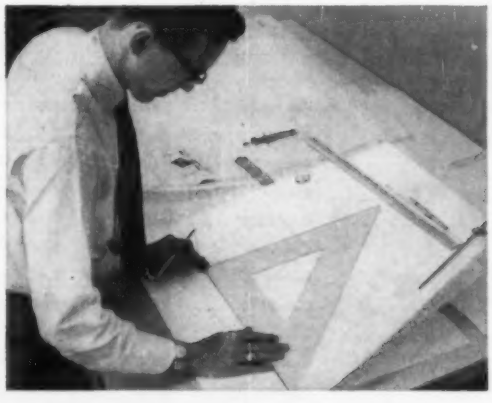
Crucible sales-service engineers give their production and toolroom people valuable metalworking assistance. They'll recommend machining speeds and feeds, quenching temperatures, the best forming and joining methods.

Behind these specialists are the resources of Crucible's entire, integrated operation – from mining the ore to steelmaking to warehouse delivery to you. Why not take advantage of these services each time you order specialty steels? They're available through every Crucible warehouse. *Crucible Steel Company of America, Dept. PH06, The Oliver Building, Mellon Square, Pittsburgh 22, Pa.*



Need certified test reports for government work? Warehouses can supply the steels and notarized reports of analyses.

Trained, experienced sales-service engineers can help your engineers use steels that are new to you.



This is the easiest way to arrange for forging, flame-cutting — have the warehouse accommodations service do it for you.

STOCK LIST
Keeps you up-to-date on local stocks of specialty steels. Just ask the Crucible salesman to place your name on the regular mailing list.

One Source For All These Steels

TOOL STEELS–Water, oil, air hardening, shock resisting, hot work, plastic and die casting steels in all forms, including bars, sheets, plates, drill rod, hollow bars, forgings and flat ground stocks

HIGH SPEED STEELS–Crucible's famous "Rex"® steels: Rex Thrift Finish rounds, hot rolled and cold drawn flats and squares, drill rod, forgings, sheets, plates, and tool bits

STAINLESS STEELS – Bars, sheet, strip, wire, cold heading wire, metalizing wire, plates, angles

FREE MACHINING STEELS – Crucible Max-el® rounds, hexagons, plates and brake die steel

ALLOY STEELS – Bars, billets, strip and sheet

COLD ROLLED CARBON SPRING STEELS

DRILL STEELS – Hollow and solid drill steels

ALUMINUM EXTRUSION DIE STEELS

HOLLOW TOOL STEEL

HARD FACING ROD

PLASTIC MOLD STEELS

PERMANENT MAGNETS

– and many others

CRUCIBLE STEEL COMPANY OF AMERICA

Branch Offices and Warehouses: Atlanta • Baltimore • Boston • Buffalo • Charlotte • Chicago • Cincinnati • Cleveland • Columbus • Dallas • Dayton Denver • Detroit • Erie, Pa. • Grand Rapids • Harrison • Houston • Indianapolis • Kansas City • Los Angeles • Milwaukee • New Haven • New York Philadelphia • Pittsburgh • Portland, Ore. • Providence • Rockford • Salt Lake City • San Francisco • Seattle • Springfield, Mass. • St. Louis St. Paul • Syracuse • Tampa • Toledo • Tulsa • Toronto, Ont.

METAL POWDERS

Cents per lb, minimum truckload, delivered E. of Miss. River, unless otherwise noted.

Iron Powders

Compacting Powders

Electrolytic, imported, f.o.b.	29.50 to 33.00
Electrolytic, domestic	34.50
Sponge	11.25
Atomized	11.25
Hydrogen Reduced	11.25 to 12.00
Carbonyl	88.00
Welding Powders*	8.10
Cutting and Scarfing Powders*	9.10

Copper Powders

Electrolytic, domestic	41.00
Precipitated	40.50 to 45.00
Atomized	39.80 to 48.30
Hydrogen reduced, f.o.b.	43.25
Bronze	47.20 to 51.50
Chromium, electrolytic	$5.00
Lead	19.00
Manganese, f.o.b.	42.00
Molybdenum	$3.60 to $3.95
Nickel	$1.05 to $1.03
Nickel Silver	53.50
Nickel Steel	13.00
Solder	13¢ plus metal value
Stainless Steel, 302	$1.07
Stainless Steel, 316	$1.26
Steel, atomized, prealloyed, 4600 series	14.00 plus metal value
Tin	14¢ plus metal value
Titanium, 99.25+%, per lb., f.o.b.	$11.25
Tungsten	$3.15 (nominal)

* F.O.B., shipping point.

BOLTS, NUTS, RIVETS, SCREWS

(Base discount, f.o.b. mill)

Pct. Discounts

Bolts	1-4 Containers	5 Containers	20,000 Lb.	40,000 Lb.
Machine				
½" and smaller x 3" and shorter	55	57	61	62
⅝" diam. x 3" and shorter	47	49½	54	55
¾" thru 1" diam x 6" and shorter	37	39½	45	46
¾" thru 1" diam. longer than 6" and 1½" and larger x all lengths	31	34	40	41
Rolled thread, ½" and smaller x 3" and shorter	55	57	61	62
Carriage, lag, plow, tap, blank, step, elevator and fitting up bolts ½" and smaller x 6" and shorter	48	50½	55	56

Note: Add 25 pct for less than container quantity. Distributor prices are 5 pct less on bolts and square nuts.

Nuts, Hex, HP reg. & hvy.	Full case or Keg price
¾ in. or smaller	62
⅞ in. to 1½ in. inclusive	56
1⅝ in. and larger	51½
C. P. Hex, reg. & hvy.	
¾ in. or smaller	62
⅞ in. to 1½ in. inclusive	56
1⅝ in. and larger	51½
Hot Galv. Hex Nuts (All Types)	
¾ in. and smaller	41
Semi-finished Hex Nuts	
¾ in. or smaller	62
⅞ in. to 1½ in. inclusive	56
1⅝ in. and larger	51½

(Add 25 pct for broken case or keg quantities)

Finished

⅞ in. and smaller 65

Rivets	*Base per 100 lb*
½ in. and larger	$12.85
	Pct. Off List
7/16 in. and smaller	15

Cap Screws	*Discount (Packages)*
	Full Finished H. C. Heat Treat
New std. hex head, packaged	Full Case
⅝" diam. and smaller x 6" and shorter	54
¾", ⅞", and 1" diam. x 6" and shorter	38
⅝" diam. and smaller x longer than 6"	..
¾", ⅞", and 1" diam. x longer than 6"	..

	C-1018 Steel Full-Finished Cartons	Bulk
¼" through ⅝" dia. x 6" and shorter	59	48
¾" through 1" dia. x 6" and shorter	45	32

Minimum quantity—¼" through ⅜" diam., 15,000 pieces; 7/16" through ⅝" diam., 5,000 pieces; ¾" through 1" diam., 2,000 pieces.

Machine Screws & Stove Bolts

Plain Finish	Discount Mach. Screws	Stove Bolts
Cartons	60	60
Bulk		
Quantity		
To ¼" diam. incl. — 25,000-and over	60	..
5/16 to ½" diam. incl. — 15,000-200,000	60	..

Machine Screws & Stove Bolt Nuts

	Discount Hex	Square
In Cartons	16	19
Quantity		
In Bulk ⅜" diam. & smaller — 25,000-and over	15	16

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, frt allowed in quantity)

Copper	
Rolled elliptical, 18 in. or longer, 5000 lb lots	46.00
Electrodeposited	37.00
Brass, 80-20, ball anodes, 2000 lb or more	51.50
Zinc, ball anodes, 2000 lb lots	17.50
(for elliptical add 1¢ per lb)	
Nickel, 99 pct plus, rolled carton, 5000 lb	1.0225
(Rolled depolarized add 3¢ per lb)	
Cadmium, 5000 lb	1.20
Tin, ball anodes $1.05 per lb (approx.).	

Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 100 lb drum	65.90
Copper sulphate, 100 lb bags, per cwt.	22.75
Nickel salts, single, 100 lb bags	36.00
Nickel chloride, freight allowed, 100 lb	45.00
Sodium cyanide, domestic, f.o.b. N. Y., 200 lb drums	23.70
(Philadelphia price 24.00)	
Zinc cyanide, 100 lb	60.75
Potassium cyanide, 100 lb drum N. Y.	45.50
Chromic acid, flake type, 10,000 lb or more	30.44

CAST IRON WATER PIPE INDEX

Birmingham	125.8
New York	138.5
Chicago	140.9
San Francisco-L. A.	148.6

Dec. 1955, value, Class B or heavier 5 in. or larger, bell and spigot pipe. Explanation: p. 57, Sept. 1, 1955, issue. Source: U. S. Pipe and Foundry Co.

STEEL SERVICE CENTERS

Metropolitan Price, dollars per 100 lb.

Cities	City Delivery† Charge	Sheets: Hot-Rolled (18 ga. & hvr.)	Sheets: Cold-Rolled (15 gage)	Sheets: Galvanized (10 gage)††	Strip: Hot-Rolled	Plates	Shapes: Standard Structural	Bars: Hot-Rolled (merchant)	Bars: Cold-Finished	Alloy Bars: Hot-Rolled 4615 As rolled	Alloy Bars: Hot-Rolled 4140 Annealed	Alloy Bars: Cold-Drawn 4615 As rolled	Alloy Bars: Cold-Drawn 4140 Annealed
Atlanta		8.59	9.87	10.13	8.91	9.29	9.40	9.39	13.24*				
Baltimore	$.10	8.65	9.35	9.09	9.15	9.10	9.65	9.55	11.80*	16.28	15.28	19.82	19.08
Birmingham		8.18	9.45	10.46	8.51	8.89	9.00	8.99					
Boston**	.10	10.52	11.27	11.82	12.17	10.42	10.72	10.34	13.45*	16.79	16.69	20.29	21.04
Buffalo**	.15	9.80	10.50	11.35	11.30	10.25	10.40	9.90	11.60*	16.34	16.45	19.01	20.80
Chicago**	.15	8.69	10.35	11.05	10.35	8.62	9.16	8.79	10.80	16.20	16.10	19.70	20.45
Cincinnati**	.15	8.86	10.41	11.10	10.67	9.00	9.84	9.11	11.68*	16.52	16.42	20.02	20.77
Cleveland**	.15	8.69[1]	9.89	11.02	10.47	8.88	9.67	8.90	11.40*	16.31	16.21	19.81	20.56
Denver	.20	9.60	11.84	12.94	9.63	9.96	10.04	10.00	11.19				20.84
Detroit**	.15	8.95	10.61	11.40	10.72	8.99	9.84	9.10	11.16	15.46	16.38	18.81	21.03
Houston		8.10	8.60		8.15	8.45	8.05	8.10	11.60	16.20	15.25	19.65	18.95
Kansas City	.15	9.02	10.27	11.37	9.33	9.71	9.82	9.81	10.22	16.87	15.87	20.37	19.62
Los Angeles**		9.95[1]	11.55	12.20	11.55	10.00	10.00	9.10	14.20	17.30	16.45	21.30	20.80
Memphis	.15	8.55	9.80		8.60	8.93	9.01	8.97	12.11*				
Milwaukee**	.15	8.83	10.49	11.19	10.49	8.76	9.30	8.93	11.04	16.34	15.34	19.84	19.09
New York**	.10	10.52	10.59	11.40	12.14	10.77	10.84	10.09	13.35*	16.16	16.50	20.10	20.85
Norfolk	.20	8.20			8.90	8.65	9.20	8.90	10.70				
Philadelphia**	.10	9.55	10.10	10.71	11.75	10.15	10.20	9.50	12.05*	16.58	16.48	20.08	20.83
Pittsburgh**	.15	8.69	9.84	10.91	10.45	8.62	9.78	8.79	11.40*	16.20	16.10	19.70	20.45
Portland		10.00	11.75	13.30	11.95	11.50	11.10	9.85	15.30*	18.50	17.45	20.75	20.25
San Francisco**	.10	11.00	11.95[2]	11.50	12.25	11.00	10.95	10.75	15.20	17.05	16.35	21.05	20.60
Seattle**		11.55	12.30	12.50	12.65	11.00	10.20	11.10	16.20	17.15	17.80	20.65	22.20
Spokane**	.15	11.70	12.45	12.65	13.30	11.15	11.35	11.75	16.35	17.75	17.95	21.55	22.35
St. Louis**	.15	9.07	10.73	11.02	10.73	9.00	9.76	9.17	11.43	16.58	16.48	20.08	19.33
St. Paul	.15	8.94	9.31	10.47	8.99	9.45	9.53	9.70	11.49		15.41		20.83

Base Quantities (Standard unless otherwise keyed): Cold finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb. All others: 2000 to 4999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may be combined with each other for quantity. ** These cities are on net pricing. Prices shown are for 2000 lb item quantities of the following: Hot-rolled sheet—10 ga. x 36 x 96—120; Cold-rolled sheet—20 ga x 36 x 96—120; Galv. sheet—10 ga x 36—120; Hot-rolled strip—¼" x 1"; Plate—¼" x 84"; Shapes—I-Beams 6 x 12.5; Hot-rolled bar—Rounds—¾-2 15/16; * C 1018—1" rounds.

†† 10¢ zinc. ‡ Deduct for country delivery. [1] 15 ga. & heavier; [2] 14 ga. & lighter.

(Effective Aug. 24, 1959)

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

Producing Point	Basic	Fdry.	Mall.	Bess.	Low Phos.
Birdsboro, Pa. *B6*	68.00	68.50	69.00	69.50	.....
Birmingham *R3*	62.00	62.50*	.....	.....	.....
Birmingham *W9*	62.00	62.50*	66.50	.....	.....
Birmingham *U4*	62.00	62.50*	66.50	.....	.....
Buffalo *R3*	66.00	66.50	67.00	67.50	.....
Buffalo *H1*	66.00	66.50	67.00	67.50	.....
Buffalo *W6*	66.00	66.50	67.00	67.50	.....
Chester *P2*	68.00	68.50	69.00	.....	.....
Chicago *I4*	66.00	66.50	66.50	67.00	.....
Cleveland *A5*	66.00	66.50	66.50	67.00	71.00†
Cleveland *R3*	66.00	66.50	66.50	67.00	.....
Duluth *I4*	66.00	66.50	66.50	67.00	71.00†
Erie *I4*	66.00	66.50	66.50	67.00	71.00†
Everett *M6*	67.50	68.00	68.50	.....	.....
Fontana *K1*	75.00	75.50	.....	.....	.....
Geneva, Utah *C7*	66.00	66.50	.....	.....	.....
Granite City *G2*	67.00	68.40	68.00	.....	.....
Hubbard *Y1*	.....	.....	66.50	.....	.....
Ironton, Utah *C7*	66.00	66.50	.....	.....	.....
Midland *C11*	66.00	.....	.....	.....	.....
Minnequa *C6*	68.00	68.50	69.00	.....	.....
Monessen *P6*	66.00	.....	.....	.....	.....
Neville Is. *P4*	66.00	66.50	66.50	67.00	71.00†
N. Tonawanda *T1*	.....	66.50	67.00	67.50	.....
Sharpsville *S3*	66.00	.....	66.50	67.00	.....
So. Chicago *R3*	66.00	66.50	66.50	67.00	.....
So. Chicago *W8*	66.00	.....	66.50	67.00	.....
Swedeland *A2*	68.00	68.50	69.00	69.50	.....
Toledo *I4*	66.00	66.50	66.50	67.00	.....
Troy, N. Y. *R3*	68.00	68.50	69.00	69.50	73.00
Youngstown *Y1*	.....	.....	66.50	.....	.....

DIFFERENTIALS: Add, 75¢ per ton for each 0.25 pct silicon or portion thereof over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct) 50¢ per ton for each 0.25 pct manganese or portion thereof over 1 pct, $2 per ton for 0.50 to 0.75 pct nickel, $1 for each additional 0.25 pct nickel. Add $1.00 for 0.31-0.69 pct phos.

Silvery Iron: Buffalo (6 pct), *H1*, $79.25; Jackson *J1*, *I4* (Globe Div.), $78.00; Niagara Falls (15.01-15.50), $101.00; Keokuk (14.01-14.50), $103.50; (15.51-16.00), $106.50. Add $1.00 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 18 pct. Add $1.25 for each 0.50 pct manganese over 1.00 pct. Bessemer silvery pig iron (under .10 pct phos.); $64.00. Add $1.00 premium for all grades silvery to 18 pct.

† Intermediate low phos.

STAINLESS STEEL

Base price cents per lb. f.o.b. mill

Product	201	202	301	302	303	304	316	321	347	403	410	416	430
Ingots, reroll.	22.75	24.75	24.00	26.25	—	28.00	41.25	33.50	38.50	—	17.50	—	17.75
Slabs, billets	28.00	31.50	29.00	32.75	33.25	34.50	51.25	41.50	48.25	—	22.25	—	22.50
Billets, forging	—	37.75	38.75	39.50	42.50	42.00	64.50	48.75	57.75	29.25	29.25	29.75	29.75
Bars, struct.	43.50	44.50	46.00	46.75	49.75	49.50	75.75	57.50	67.25	35.00	35.00	35.50	35.50
Plates	39.25	40.00	41.25	42.25	45.00	45.75	71.75	54.75	64.75	30.00	30.00	31.25-31.75	31.00
Sheets	48.50	49.25	51.25	52.00	56.75	55.00	80.75	65.50	79.25	40.25	40.25	48.25	40.75
Strip, hot-rolled	36.00	39.00	37.25	40.50	—	44.25	69.25	53.50	63.50	—	31.00	—	32.00
Strip, cold-rolled	45.00	49.25	47.50	52.00	56.75	55.00	80.75	65.50	79.25	40.25	40.25	42.50	40.75
Wire CF; Rod HR	—	42.25	43.50	44.25	47.25	47.00	71.75	54.50	63.75	33.25	33.25	33.75	33.75

STAINLESS STEEL PRODUCING POINTS:

Sheets: Midland, Pa., *C11*; Brackenridge, Pa., *A3*; Butler, Pa., *A7*; Vandergrift, Pa., *U1*; Washington, Pa., *W2*, *J2*; Baltimore, *E1*; Middletown, O., *A7*; Massillon, O., *R3*; Gary, *U1*; Bridgeville, Pa., *U2*; New Castle, Ind., *I2*; Detroit, *M2*; Louisville, O., *R5*.

Strip: Midland, Pa., *C11*; Waukegan, Cleveland, *A5*; Carnegie, Pa., *S9*; McKeesport, Pa., *F1*; Reading, Pa., *C2*; Washington, Pa., *W2*; W. Leechburg, Pa., *A3*; Bridgeville Pa., *U2*; Detroit, *M2*; Detroit, *S1*; Canton, Massillon, O., *R3*; Harrison, N. J., *D3*; Youngstown, *R5*; Sharon, Pa., *S1*; Butler, Pa., *A7*; Wallingford, Conn., *U3* (plus further conversion extras); *W1* (25¢ per lb. higher); Seymour, Conn., *S13*, (25¢ per lb. higher); New Bedford, Mass., *R6* Gary, *U1*, (25¢ per lb. higher); Baltimore, Md., *E1* (300 series only).

Bar: Baltimore, *A7*; S. Duquesne, Pa., *U1*; Munhall, Pa., *U1*; Reading, Pa., *C2*; Titusville, Pa., *U2*; Washington, Pa., *J2*; McKeesport, Pa., *U1*, *F1*; Bridgeville, Pa., *U2*; Dunkirk, N. Y., *A3*; Massillon, O., *R5*; S. Chicago, *U1*; Syracuse, N. Y., *C11*; Watervliet, N. Y., *A3*; Waukegan, *A5*; Canton, O., *T5*, *R3*; Ft. Wayne, *I4*; Detroit, *R5*; Gary, *U1*; Owensboro, Ky., *G5*; Bridgeport, Conn., *N8*; Ambridge, Pa., *B7*.

Wire: Waukegan, *A5*; Massillon, O., *R3*; McKeesport, Pa., *F1*; Ft. Wayne, *J4*; Newark, N. J. *D2*; Harrison, N. J., *D3*; Baltimore, *A7*; Dunkirk, *A3*; Monessen, *P1*; Syracuse, *C11*; Bridgeville, *U2*; Detroit, *R5*; Reading, Pa., *C2*; Bridgeport, Conn., *N8*.

Structurals: Baltimore, *A7*; Massillon, O., *R3*; Chicago, Ill., *J4*; Watervliet, N. Y., *A3*; Syracuse, *C11*; S. Chicago, *U1*.

Plates: Ambridge, Pa., *B7*; Baltimore, *E1*; Brackenridge, Pa., *A3*; Chicago, *U1*; Munhall, Pa., *U1*; Midland, Pa., *C11*; New Castle, Ind., *I2*; Middletown, *A7*; Washington, Pa., *J2*; Cleveland, Massillon, *R3*; Coatesville, Pa., *C15*; Vandergrift, Pa., *U1*; Gary, *U1*.

Forging billets: Ambridge, Pa., *B7*; Midland, Pa., *C11*; Baltimore, *A7*; Washington, Pa., *J2*; McKeesport, *F1*; Massillon, Canton, O., *R3*; Watervliet, *A3*; Pittsburgh, Chicago, *U1*; Syracuse, *C11*; Detroit, *R5*; Munhall, Pa., S. Chicago, *U1*; Owensboro, Ky., *G5*; Bridgeport, Conn., *N8*; Reading, Pa., *C2*.

(Effective Aug. 24, 1959)

INDUSTRIAL AND ORNAMENTAL

PERFORATED METALS

DESIGNED AND PRODUCED FOR EVERY PURPOSE

Steel, brass, copper, monel, bronze, aluminum, zinc, tinplate, lead, stainless steel, coated metals, bonded materials, plastics and paper punched as required and for all kinds of screens.

We can guarantee sheets that are perfectly flat, straight parallel on sides, and free from buckle or camber.

A tremendous variety of screens. Our modern tool and machine shop is constantly building new dies placing us in a position to construct special dies as conditions may demand.

Metallurgical and design assistance.

CHARLES MUNDT & SONS
53 FAIRMOUNT AVE. JERSEY CITY 4, N. J.

80 years of experience.
Large enough for big jobs, small enough for personal attention.

Write for free catalog

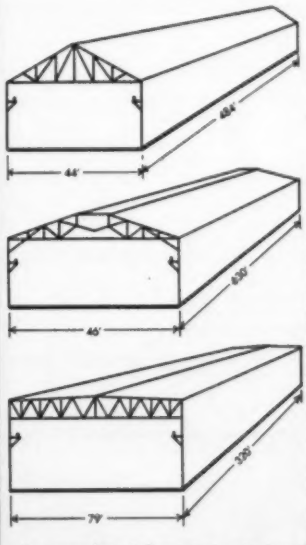
PERFORATION SPECIALISTS OF ALL TYPES OF MATERIALS

Dismantling surplus facilities as a result of Aluminum Company of America's Modernization Program at Massena, N. Y.

21 Steel-Frame Heavy Industrial BUILDINGS

(Brick Curtain-walls)

IN EXCELLENT CONDITION
MUST BE SOLD AT ONCE
Various Sizes, Clear Spans
All with Overhead Cranes
Easily Dismantled
Ideal for Re-erection



HEAVY ELECTRICAL EQUIPMENT
Including motors, generators, transformers, converters, rectifiers, controls, etc.

Rotary BALL-MILL, cement mixer batch plant, foundry items, gas producer machines, crushers, blowers, scales, heavy carts, crane boxes, bucket and belt conveyors, hydropneumatic accumulator, etc.

Structural steel shapes, pipe, valves, grating, overhead doors, steel & wood silos and numerous other items.

For complete information, prices and inspection arrangements contact

CUYAHOGA WRECKING CO.
SALES AND FIELD OFFICE
P. O. BOX 384 MASSENA, N. Y. RO 4-0253

FERROALLOY PRICES

Ferrochrome

Cents per lb contained Cr, lump, bulk, carloads, del'd. 67-71% Cr, .30-1.00% max. Si.

0.02% C....	41.00	0.50% C....	38.00
0.05% C....	39.00	1.00% C....	37.75
0.10% C....	38.50	1.50% C....	37.50
0.20% C....	38.25	2.00% C....	37.25

4.00-4.50% C, 60-70% Cr, 1-2% Si.. 37.25
3.50-5.00% C, 57-64% Cr, 2.00-4.50% Si 28.25
0.025% C (Simplex) 39.75
8% max C, 50-55% Cr, 6% max Si. 25.75
4½% max C, 50-55% Cr, 2% max Si 26.50

High Nitrogen Ferrochrome

Low-carbon type 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome max. 0.10% C price schedule.

Chromium Metal

Per lb chromium, contained, packed, delivered, ton lots, 97.25% min. Cr, 1% max. Fe.

0.10% max. C	$1.29
9 to 11% C, 88-91% Cr, 0.75% Fe...	1.38

Electrolytic Chromium Metal

Per lb of metal 2" x D plate (⅛" thick) delivered packed, 99.80% min. Cr. (Metallic Base) Fe 0.20 max.

Carloads	$1.15
Ton lots	1.17
Less ton lots	1.19

Low Carbon Ferrochrome Silicon

(Cr 39-41%, Si 42-45%, C 0.05% max.) Carloads, delivered, lump, 3-in. x down, packed.

Price is sum of contained Cr and contained Si.

	Cr	Si
Carloads, bulk	28.25	14.60
Ton lots	33.50	16.05
Less ton lots	35.10	17.70

Calcium-Silicon

Per lb of alloy, lump, delivered, packed. 30-33% Ca, 60-65% Si, 3.00 max. Fe.

Carloads, bulk	24.00
Ton lots	27.95
Less ton lots	29.45

Calcium-Manganese—Silicon

Cents per lb of alloy, lump, delivered, packed.
16-20% Ca, 14-18% Mn, 53-59% Si.

Carloads, bulk	23.00
Ton lots	26.15
Less ton lots	27.15

SMZ

Cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe ½ in. x 12 mesh.

Ton lots	21.15
Less ton lots	22.40

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, V-5; 38-42% Cr, 17-19% Si, 8-11% Mn, packed.

Carload lots	18.45
Ton lots	19.95
Less ton lots	21.20

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.

Carload bulk	19.20
Ton lots to carload packed	21.15
Less ton lots	22.40

Ferromanganese

Maximum base price, f.o.b., lump size, base content 74 to 76 pct Mn. Carload lots, bulk.

Producing Point	Cents per-lb
Marietta, Ashtabula, O.; Alloy, W. Va.; Sheffield, Ala.; Portland, Ore.	12.25
Johnstown, Pa.	12.25
Neville Island, Pa.	12.25
Sheridan, Pa.	12.25
Philo, Ohio	12.25
S. Duquesne	12.25

Add or substract 0.1¢ for each 1 pct Mn above or below base content.

Briquets, delivered, 66 pct Mn:

Carloads, bulk	14.80
Ton lots packed in bags	17.20

Spiegeleisen

Per gross ton, lump, f.o.b. Palmerton, Pa., and Neville Island, Pa.

Manganese	Silicon	
16 to 19%	3% max.	$100.50
19 to 21%	3% max.	102.50
21 to 23%	3% max.	105.00

Manganese Metal

2 in. x down, cents per pound of metal delivered.

95.50% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.

Carload, packed	45.75
Ton lots	47.25

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, f.o.b. Marietta, O., delivered, cents per pound.

Carloads	34.00
Ton lots	36.00
250 to 1999 lb	38.00
Premium for Hydrogen - removed metal	0.75

Medium Carbon Ferromanganese

Mn 80 to 85%, C 1.25 to 1.50, Si 1.50% max., carloads, lump, bulk, delivered, per lb of contained Mn 25.50

Low-Carb Ferromanganese

Cents per pound Mn contained, lump size, packed, del'd Mn 85-90%.

	Carloads	Ton	Less
0.07% max. C, 0.06% P, 90% Mn	(Bulk) 37.15	39.95	41.15
0.07% max. C	35.10	37.90	39.10
0.10% max. C	34.35	37.15	38.35
0.15% max. C	33.60	36.40	37.60
0.30% max. C	32.10	34.90	36.10
0.50% max. C	31.60	34.40	35.60
0.75% max. C, 80-85% Mn, 5.0-7.0% Si ...	28.60	31.40	32.60

Silicomanganese

Lump size, cents per pound of metal, 65-68% Mn, 18-20% Si, 1.5% max. C for 2% max. C, deduct 0.2¢ f.o.b. shipping point.

Carloads bulk	12.80
Ton lots, packed	14.45
Carloads, bulk, delivered, per lb of briquet	15.10
Briquets, packed pallets, 2000 lb up to carloads	17.50

Silvery Iron (electric furnace)

Si 15.50 to 16.00 pct., f.o.b. Keokuk, Iowa, or Wenatchee, Wash., $106.50 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., $93.00.

Silicon Metal

Cents per pound contained Si, lump size, delivered, packed.

	Ton lots,	Carloads,
98.25% Si, 0.50% Fe..	22.45	21.25
98% Si, 1.0% Fe	21.95	20.65

Silicon Briquets

Cents per pound of briquets, bulk, delivered, 40% Si, 2 lb Si, briquets.

Carloads, bulk	8.00
Ton lots, packed	10.80

Electric Ferrosilicon

Cents per lb contained Si, lump, bulk, carloads, f.o.b. shipping point.

50% Si....	14.60	75% Si....	16.90
65% Si....	15.75	85% Si....	18.60
	90% Si....	20.00	

Ferrovanadium

50-55% V delivered, per pound, contained V, in any quantity.

Openhearth	3.20
Crucible	3.30
High speed steel	3.40

Calcium Metal

Eastern zone, cents per pound of metal, delivered.

	Cast	Turnings	Distilled
Ton lots	$2.05	$2.95	$3.75
100 to 1999 lb..	2.40	3.30	4.55

(Effective Aug. 24, 1959)

Alsifer, 20% Al, 40% Si, 40% Fe, f.o.b. Suspension Bridge, N. Y., per lb.

Carloads, bulk	9.85¢
Ton lots	11.20¢

Calcium molybdate, 43.6-46.6% f.o.b. Langeloth, Pa., per pound contained Mo $1.50

Ferrocolumbium, 58-62% Cb, 2 in. x D, delivered per pound

Ton lots	$3.45
Less ton lots.....	3.50

Ferro-tantalum-columbium, 20% Ta, 40% Cb, 0.30% C, del'd ton lots, 2-in. x D per lb con't Cb plus Ta $3.40

Ferromolybdenum, 55-75%, 200-lb containers, f.o.b. Langeloth, Pa., per pound contained Mo.. $1.76

Ferrophosphorus, electric, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., $5.00 unitage, per gross ton $120.00
10 tons to less carload $131.00

Ferrotitanium, 40% regular grade 0.10% C max., f.o.b. Niagara Falls, N. Y., and Cambridge, O., freight allowed, ton lots, per lb contained Ti $1.35

Ferrotitanium, 25% low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Cambridge, O., freight allowed, ton lots, per lb contained Ti $1.50
Less ton lots $1.54

Ferrotitanium, 15 to 18% high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload per net ton $255.00

Ferrotungsten, ¼ x down packed, per pounds contained W, ton lots delivered ..... $2.15 (nominal)

Molybdic oxide, briquets per lb contained Mo, f.o.b. Langeloth, Pa. $1.49
bags, f.o.b. Washington, Pa., Langeloth, Pa. $1.38

Simanal, 20% Si, 20% Mn, 20% Al, f.o.b. Philo, Ohio, freight allowed per lb.

Carload, bulk lump	18.50¢
Ton lots, packed lump	20.50¢
Less ton lots	21.00¢

Vanadium oxide, 86-89% V_2O_5 per pound contained V_2O_5 .... $1.38

Zirconium silicon, per lb of alloy

35-40% del'd, carloads, bulk..	26.25¢
12-15%, del'd lump, bulk-carloads	9.25¢

Boron Agents

Borosil, per lb of alloy del. f.o.b. Philo, Ohio, freight allowed, B 3-4%, Si 40-45%, per lb contained B
2000 lb carload $5.50

Ferro Zirconium Boron, Zr 50% to 60%, B 0.8% to 1.0%, Si 8% max., C 8% max., Fe balance, f.o.b. Niagara Falls, New York, freight allowed, in any quantity per pound ..... 30¢

Corbortam, Ti 15-21%, B 1-2%, Si 2-4%, Al 1-2%, C 4-5-7.5%, f.o.b., Suspension Bridge, N. Y., freight allowed.
Ton lots per pound ..... 18.25¢

Ferroboron, 17.50 min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D, ton lots... $1.20
F.o.b. Wash., Pa., Niagara Falls, N. Y., delivered 100 lb up

10 to 14% B	.85
14 to 19%	1.20
19% min. B	1.50

Grainal, f.o.b. Cambridge, O., freight, allowed, 100 lb and over

No. 1	$1.05
No. 79	50¢

Manganese-Boron, 75.00% Mn, 17.50% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd.

Ton lots (packed)	$1.46
Less ton lots (packed)	1.57

Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, del'd less ton lots 2.15

Nice work if you can do it...

and you can...

with GISHOLT Turret Lathes...

Gisholt 3L Saddle Type Turret Lathe—one of five sizes for heavy-duty work of all kinds

Straight Machining... Angular Machining and Assembly...

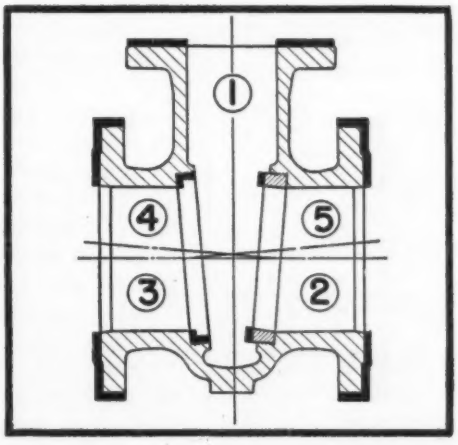
all in one chucking!

Talk about time-cutting ideas, here's the versatility of a Gisholt 3L Saddle Type Turret Lathe paying off again.

All operations required to machine these gate valve bodies are done in a single chucking with a five-position indexing fixture. In addition to machining the bonnet and the two ends, the recesses for the two seat rings are bored and threaded at a five degree angle.

Then the seat rings are inserted—and tightly screwed in place with a driver mounted on the turret. The driving is done with a constant torque—adjustable to suit each job. The final operation is finish facing the seat ring after it is in place with the cross-feeding turret.

Gisholt Engineers have storehouses of ideas to help you increase your production. Ask one to call.



GISHOLT MACHINE COMPANY

Madison 10, Wisconsin, U.S.A.

MASTERLINE GISHOLT SINCE 1887 GISHOLT

ASK YOUR GISHOLT REPRESENTATIVE ABOUT GISHOLT FACTORY-REBUILT MACHINES WITH NEW MACHINE GUARANTEE

RAILWAY EQUIPMENT
FOR SALE
Used "As Is" and Reconditioned
RAILWAY CARS
All Types
SERVICE-TESTED
FREIGHT CAR REPAIR PARTS
For All Types of Cars

3—DIESEL-ELECTRIC LOCOMOTIVES
General Electric
44-Ton Standard Gauge
in ICC Operating Condition

10 Covered Hopper Cars
70-Ton Capacity, Standard Gauge
2—RAILROAD TRACK SCALES
1—150-Ton, Heavy Duty, 60'
1—125-Ton, 52'6"
RAILWAY TANK CARS and STORAGE TANKS
6,000-, 8,000- and 10,000-Gallon
Cleaned and Tested
IRON & STEEL PRODUCTS, INC.
General Office
13496 S. Brainard Ave.
Chicago 33, Illinois
Phone: Mitchell 6-1212
New York Office
Suite 1608-9, 51-B E. 42nd St.
New York 17, N. Y.
Phone: YUkon 6-4766
"ANYTHING containing IRON or STEEL"

REBUILT—GUARANTEED ELECTRICAL EQUIPMENT

MOTOR GENERATOR SETS

(3)—3500-KW Allis-Chalmers 5-unit sets consist of (2) 1750-KW Gen., 350/700-VDC, (1) 5000-HP syn. motor, 13800/6900/4160-V, 3 hp., 60 cy., (2) exciter generators.

(1)—S. & S. 5-unit set consists of—(1) 2500-HP syn. motor, 11000/4160-V., 3 ph., 60 cy., (1) 1060-KW Gen. 600-VDC, (2) 760-KW Gen. 600-VDC, (1) exciter gen. (Will split this set to fit your requirements).

(1)—200-KW Set consisting of (2) 1000-KW gen. 600-VDC, (1) 2500-HP syn. motor, 11000/-4160-V., 3 ph., 60 cy.

(1)—1875-KW Whse. 2-unit set—(1) 250-VDC gen., (1) 2700-HP syn. motor, 13800/6900/-4160-V., 3 ph., 60 cy.

(1)—1250-KW Gen., Elec. 2-unit set—(1) 132/265-VDC gen., (1) 1750-HP syn. motor, 4160-V., 3 ph., 60 cy.

(1)—850-KW Gen. Elec. 2-units set—(1) 250/300-VDC gen., (1) 1250-HP syn. motor, 13800/-6900/4160-V., 3 ph., 60 cy.

MOTORS

(1)—2200 H.P. Westinghouse motor, 600 VDC., 92/132 R. P. M.

(2)—600 HP, Allis Chalmers motors, 600 VDC, 300/600 R.P.M.

T. B. MAC CABE COMPANY
4302 Clarissa St., Philadelphia 40, Penna.
Cable Address "Macsteel" Philadelphia, Pa.
Phone Davenport 4-8300

Pittsburgh Sales Ebb Laid to Steel Strike

Used machinery sales in the Pittsburgh area have slowed because of work cutbacks.

Dealers are awaiting the outcome of steel negotiations for sales to pick up.

■ Big question for Pittsburgh dealers is what happens after the steel strike.

There is no question at all about the present. The steel shutdown has depressed business. Some dealers say the letdown had been more moderate than expected. Others feel a seasonal lag was due anyway.

But all agree orders and inquiries are down sharply. Phones are not ringing. Buying programs have been held up. The district is marking time.

Hope for Recovery — Dealers hope the end of the strike will see the recovery take up where it left off in July. But some fear that at least a portion of the first half activity was stimulated by anticipation of the strike. They just don't know how much solid business will develop after Labor day.

"The steel strike is not helping," says a supplier of mill equipment. "We're moving a little equipment but there are no big sales." Buyer interest is scattered, reports the dealer; it ranges from bar mills down to hand sheet mills.

Mill Trend Indefinite—There is no clear trend at present for mill machinery men. Inquiries are called sporadic. Price thinking of sellers varies widely. Some mills are sitting on equipment and asking high prices. Others are anxious to move lines and pricing is secondary. Except for the few smaller mills that are still working, it is not possible to get much definite information on availability or need.

"We can't get a yes or no answer out of buyers or sellers."

In general machinery lines, business is called spotty. Phone calls are off and there seems to be a shortage of work among consumers. Dealers will get inquiries from a number of customers on similar machines. It will turn out that all are bidding for the same job and only the plant that gets the job has a real need.

Supply Increasing — While demand is lagging, the supply of equipment seems to be increasing. A recent call for horizontal boring mills drew a wide response from suppliers. One dealer attributed the oversupply to government action in turning loose stockpiled equipment. A number of big lathes and boring mills have been auctioned off recently.

In this situation prices have held at depressed levels. "It's still a buyers market," reports a dealer. For presses and other fabricating lines, inquiries are down even more than for machine tools.

Some Future Orders—A supplier of electrical equipment has received a few orders from steel mills for delivery after the strike. Phone inquiries are off for this dealer but written inquiries are holding up fairly well.

CONSIDER GOOD USED EQUIPMENT FIRST

BENDING ROLL
32' Baldwin Pyramid Type
Capacity ¾"
NEW 1942

BRAKE—BOX & PAN
8' x ¼" Dreis & Krump, 12" Finger Extension
BRAKES—PRESS TYPE
90 ton Niagara, Model 90-8-10
16' x 10 Ga. Clearing
CRANES—OVERHEAD ELECTRIC TRAVELING
5 ton P&H 40' Span 220 Volt D.C.
10 ton P&H 55' Span 230/3/60
10 ton P&H 29' Span 230 Volt D.C.
10 ton Milwaukee 57' Span 230 Volt D.C.
10 ton Whiting 75' Span 220/3/60 A.C.
10 ton Shaw 120' Span 230 Volt D.C.
15 ton Milwaukee 56' Span-440/3/60 A.C.
5 ton Aux Arr. for Magnet Opr.
15 ton Shepard Niles 55' 8" Span 220/3/60
With 5 ton Auxiliary
20 ton P&H 57' 6" Span 220/3/60
With 5 ton Auxiliary
30 ton Shaw 70' Span 230 Volt D.C.
120 ton Niles 67' Span 230 Volt D.C.
120 ton Shepard Niles 77' Span 220/3/60 A.C.
DRAW BENCHES
7,000 lb. Draw Bench, 51 ft. Draw
10,000 lb. Draw Bench, 50 ft. Draw
35,000 lb. Draw Bench, 41 ft. Draw
FLANGING MACHINE
¾" Blue Valley No. 4
FORGING MACHINES
1" to 5" Acme, Ajax, National
HAMMERS—BOARD DROP—STEAM DROP—STEAM FORGING 800 lb. to 12,000 lb. incl.

HEADERS
#150C Manville Single Stroke Solid Die
#44 Waterbury Farrel Dble. Str. Open Die
¾"National DSSD Header, with 1" National Hydr. Straightener & #4 Ajax-Hegue Wire Drawer
LEVELERS—ROLLERS
24" Torrington 9 Rolls 8" Dia.
50" Youngstown Processor & Leveler, Capy. .100"
60" Guide 17 Rolls 4⅜" Dia.
72 Leveler 17 Rolls 2¾" Backed Up
NIBBLER
Pullmax Model 2, Capacity 11/32"
PRESSES—HYDRAULIC
300 ton Southwark Platen 28" x 28", Stroke 25"
500 ton HPM 4-Col. Bed Area 36"x36", Stroke 24"
500 ton Watson Stillman Piercing Press, 48" x 72"
1000 ton Southwark Bed 44" x 54", Stroke 20"
4500 ton B-L-H Bed 68" x 68", Stroke 40"
PUNCH & SHEAR COMBINATIONS
#2½ Buffalo Ironworker
Cleveland Style W, 60" Throat, 312 Ton Capy. Complete with dishing att., punches, shear blades
ROLLING MILLS
3½" x 7" Six Cluster Mill
10" x 14" Single Stand Two High
13" x 16" Single Stand Two High
16" x 24" Two Stand Two High
26" x 60" Single Stand Two High
12" x 32" Birdsboro 3-Hi Bar Mill
22" x 40" Lewis 3-Hi Sheet Mill
22" x 84" Single Stand Three High
34" x 112" Single Stand Three High
ROLLS—PLATE STRAIGHTENING
72" McKay 9 Rolls 15" Dia. Backed-up
92" Hilles & Jones, 6 Rolls 10" Dia.
SCALPING OR BILLET PEELING MACHINE
Medart #6 Size HFBP, Capacity, 3⅛" to 5" Incl.

SHEAR—BAR
#4½ United Vertical Bar Shear R H
SHEAR—GATE
8' x 1" Wood Hydraulic
SHEARS, MISC.
60" x 10 Ga. Cut-off Line
84" x 3/16" United Up-Cut, 50 H.P. A.C. Motor Drive
SHEARS—ROTARY
No. 22A Quickwork Whiting 3/16" Capacity
No. 40A Quickwork Whiting ½" Capacity
SHEARS—SQUARING
6' x 14 Ga. Edwards, Motor Drive—LATE
10' x ¼" United
10' x ⅝" Niagara No. 910
6' x ½" Cincinnati
8' x ½" Bertsch
SLITTERS
36" Waterbury Farrel, Slitting Line, Arbor 4½" Dia.
36" Wean Slitting Line, Arbor 5" Dia.
STRAIGHTENERS
Torrington #1734 12-Roll, Capy. 1⅜", Rd. 1-9/16"
⅝" Medart Straightening & Cut-off Machine 20 ft. Cut-off
SWAGING MACHINE
#6½A Fenn 2-Die, Capacity 3⅝" Tube, 1¼" Solid 10" Die Length, Hydraulic Feed
TESTING MACHINES
20,000 lb. Baldwin Univ. Hydraulic
60,000 lb. Olsen Universal Hydraulic
100,000 lb Olsen 4-Screw Beam Type Universal
200,000 lb. Olsen 4-Screw Beam Type Universal
500,000 lb. Olsen, Super DeLuxe Compression
TUBE REDUCERS
1¼" Standard Tube Reducer
2½" Standard Tube Reducer
3½" Tube Reducer for Aluminum
WIRE DRAWING MACHINES
Type B Morgan 4-Block Capy. #5' Rod down
Superior 7-Draft Cone Type Capy. 14 Ga. down

Manufacturing • **A. T. HENRY & COMPANY, INC.** • Equipment
50 CHURCH ST., NEW YORK CITY 8
Telephone COrtlandt 7-3437

Confidential Certified Appraisals
Liquidations — Bona Fide Auction Sales Arranged

Consulting Engineering Service
Surplus Mfg. Equipment Inventories Purchased

VARIABLE VOLTAGE DRIVES

3 PHASE 60 CYCLE

Quan.	Size	Description
2	3000 HP	DC MOTORS—525 V., 600 RPM Whse. M.G. Sets—2500 K.W. Whse., 2300/4160 V.
1	2750 HP	DC MOTOR 450 V. 300 RPM Elliott 2200 K.W., Gen. Elec. 3 unit 450 V. DC Gen. with 3000 H.P. 720 RPM, 2300 V. AC Motor and Etc.
1	2250 HP	DC MOTOR 600 V. 400/500 RPM. G.E. M.G. Set—2000 K.W. G.E. AC Motor—2300 V.
1	1500 HP	DC MOTOR 600 V. 680 RPM Whse. M.G. Set. 1500 KW G.E. 11000 V.

For listing of Motors, Generators, Transformers, M.G. Sets, Rectifiers, Mill Motors, etc. See last week issue.

Write — Phone — Wire

BELYEA COMPANY, Inc.
47 Howell St., Jersey City, N. J.
Tel. Oldfield 3-3334

COMPRESSORS

America's dominant medium for Compressors—AMERICAN

100 CFM 125 psi 6 x 7 Ing. or Worth.
138 CFM 100 psi 7 x 7 Ing. ES-1
191 CFM 300 psi 9-4¼ x 9 ES-2
234 CFM 100 psi 9 x 9 Ing.—Worth.
268 CFM 500 psi 10-4½ x 10 Ing.
290 CFM 75 psi 10 x 9 Ing. ES-1
311 CFM 1500 psi 10½-7⅛-3½ x 13 Ing. ES-3
485 CFM 100 psi 12 x 11 Ing.
486 CFM 125 psi 11¼-7 x 7 Worth. Y 75 HP
502 CFM 125 psi 12 x 13 Worth. HB
585 CFM 100 psi 15-9½ x 12 Ing. 3-60-4160
628 CFM 100 psi 14 x 13 Ing. ES
676 CFM 100 psi 15-9½ x 12 Ing. XRB-Worth
870 CFM 125 psi 17-10½ x 12 Ins. XRE 3-60-220
1055 CFM 100 psi 18-11 x 12 Ing. XRE
1545 CFM 110 psi 21-13 x 14 Ing. XRE 250 HP 3-60-220 or 440
1335 CFM Vac 31 x 13 Ing. ES Worth. HB
Portable—Gas-diesel 60"-600'
75 CFM Worth. portable (New) $2275

AMERICAN AIR COMPRESSOR CORP.
DELL AND IRON STREETS
NORTH BERGEN, N. J.
Telephone UNion 5-4848

FOR SALE OR RENT

50 Ton American Diesel Locomotive Crane. New 1944. Caterpillar D-17000 Engine. 15 KW Magnet Generator.

1000 HP Alco Diesel Electric Switcher Locomotives. New 1945. Modern-excellent. ICC Equipped.

44 Ton Gen. Elec. and Whitcomb Diesel Elec. Locomotives. 4 Traction Motors. Heavy Duty.

30 Ton Browning Diesel Loco. Crane

60 Ton Link-Belt K-595 Lifting Crane. 120' Boom. Cat. D-17000 Diesel.

WHISLER EQUIPMENT CO.
1910 Railway Exchange Bldg., St. Louis 1, Mo.
CHestnut 1-4474

CRANES

BOUGHT & SOLD

ENGINEERED TO YOUR REQUIREMENTS

Ornitz Equipment Corp.
Industrial Engineering Service
595 Bergen St. Brooklyn 38, N. Y.
MEvins 8-3566

eastern Rebuilt Machine Tools

THE SIGN OF QUALITY—THE MARK OF DEPENDABILITY

PRESSES
No. 6 Verdin, Kappes & Verdin Straight Side
No. 6 Toledo Single Geared Open Back Inclinable Punch Press, m.d.
No. 6F E. W. Bliss Three Crank Cupping Press
No. 164½ Toledo Toggle Drawing & Deep Stamping
7½ ton French Oil Mill Machine Co. Straightening, m.d., 1942
100 ton Wood Model 8229 Vertical Hydraulic, 4 col. single action-down
300 ton Chambersburg Hydro-Pneumatic Wheel, m.d.
600 ton Niles Horizontal Wheel Press
Type S750 Hennifin Hydraulic Straightening, m.d.
Model H Cleveland O.B.I. Punch Press, belt drive
No. 3AA Canno (American Can Co.) Open Back Inclinable Punch Press, m.d.

TAPPERS
No. 1 Bakewell, m.d., late
No. 10 Model 2100 Warner & Swasey Bench Model, m.d.

TURRET LATHES
No. 1 Warner & Swasey "Electric", m.d., bar
No. 1S-25 Acme Saddle Type, m.d.
No. 1L Gisholt Universal m.d., 1943
No. 2 Bardons & Oliver Ram Type Electric, m.d.
No. 2A Warner & Swasey, 1946
No. 2H8, Libby, 1942
No. 3 Gisholt, m.d., 1945
No. 3A Warner & Swasey, m.d.
No. 3 Bardons & Oliver Ram Type, flanged, m.d.
No. 3L Gisholt, m.d., 1943
No. 3AL Gisholt, with cross sliding turret, 1940
No. 4 Midland Universal Ram Type, m.d.
No. 4 Warner & Swasey Universal Ram Type, m.d.
No. 4 Gisholt, 1943
No. 4A Warner & Swasey Universal Hollow Hexagon, m.d.
No. 4A Warner & Swasey Universal, m.d., chucking, 1939
No. 4L Gisholt Universal, m.d.
No. 4FU Foster Fastermatic, m.d., latest, 1945
No. 4H-12 Libby, m.d.
No. 4R Libby Ram Type, m.d. in base
No. 5 Midland, m.d.
No. 5 Gisholt, Ram Type, m.d.
No. 5L Gisholt, 1946
No. 6,2 Denver Acme Ram Type Universal, m.d., 1944
No. 7 Bardons & Oliver, m.d.

We carry an average stock of 2,000 machines in our 11 acre plant at Cincinnati. Visitors welcome at all times

THE EASTERN MACHINERY COMPANY
1002 Tennessee Avenue, Cincinnati 29, Ohio
MElrose 1-1241 CABLE ADDRESS—EMCO

UNIVERSAL Machinery & Equipment Co.

AMERICA'S LARGEST STOCK OF FOUNDRY EQUIPMENT

ARC MELTING FURNACES
1—250# LECTROMELT—300 KVA
1—2000# SWINDELL—800 KVA
1—3000 HEROULT
1—6000# LECTROMELT, Door Charge
1—3 ton SWINDELL Top Charge—Late
DETROIT FURNACES—10 lb. to 3000 lb. Cap.

INDUCTION FURNACES
1—20 KW AJAX Spark Gap 17# Melting
1—50 KW TOCCO w/W.C. motor generator
1—100 KW INDUCTION—Very Late

HEAT TREAT FURNACES
1—4'x4'x10' Gas Fired Box
1—10"Hx24"Wx60"L double door 1750°F. Gas
1—12"x36"x8" HAYES Hardening 40 KW
1—7' G. E. Rotary Hearth Electric, 1900°F

CLEANING EQUIPMENT AND GRINDERS
1—15x20 WHEELABRATOR
1—27x36 WHEELABRATOR w/loader
1—34x42 WHEELABRATOR w/loader
1—48x42 WHEELABRATOR w/loader
1—48x48 WHEELABRATOR w/loader and D/C
1—63x96 WHEELABRATOR w/loader and D/C
1—AMERICAN 2 Ft. Swing Table
2—AMERICAN No. 1-A Multi-Table
1—PANGBORN TABLAST, 6' LK Table
1—PANGBORN TABLAST, 8' Table
1—SAFETY 10 H.P. Swing Grinder
1—WHITING 26"x54" tumbling barrel

. . . SPECIAL . . .
PANGBORN Continuous Pipe Cleaning Machine w/dust collector, handle to 14" O.D. pipe.
BYERS Mobile Crane, 50' boom, BUDA Empire Ideal yard crane at very low price
2" cap. GUILLOTINE Bar Shear
10,000# Southwark Hyd. Test. Machine
DILLON Wire Testing Machine
500,000# TINIUS OLSEN Compression Tester
3000 Kg. BRINELL Hardness-Tester

1630 NORTH NINTH ST. READING, PA. PHONE FRANKLIN 3-5103

CAST NEW 1937 — 25 CAR SETS

FREIGHT CAR TRUCKS

40-ton Bettendorf U equipped with one-wear, wrought steel wheels.

125 50-ft. Box Cars
All steel, double doors.

42 ft. 50-ton Flat Cars
Just 8. Fishbelly side and center sills.

42 ft. Steel Gondola Cars
Only 5, all steel.

70 ft. 50-ton Flat Cars
Fishbelly center sills.

SALE OR LEASE

MORRISON RAILWAY SUPPLY CORP.
814 Rand Bldg. Buffalo 3, N. Y.

36" x 70' OVERALL LEBLOND COMBUSTION OIL FIELD TURNING, THREADING, BORING & TREPANNING LATHE (CAN BE USED AS A 25' CC LATHE)
Bit. 1941. Used in gov. arsenal only. Excel. cond. 16" hole in spdle. 36" chuck, 6" boring bar, 25' max. cap. Two carriages with tapers. 40-30-10-7½-5 HP motors. Replacement value $150,000. Terms. 90 day return guarantee. Price before removal $15,950.
MESTA ALLIGATOR SHEAR #4, cast steel constr., will cut 7" round or 2" x 12" cold soft steel, 15 cuts PM. blades 72" Long, gear driven by 50 HP motor. Excellent condition. Used 1 day a month only.
25/45/50 TON WHITCOMB, PORTER, ATLAS DIESEL ELEC. LOCOMOTIVES: New '40-'41. Used 1 yr. REASONABLE.
25/30/40 Ton Cat. Diesel Orton-Browning-Ohio Locomotive Cranes, 1944, used one year by govt.
12' x 12' x 38' Table Travel Sellers, Dble. Housing Planer. Excellent condition.
48" x 48" x 16' Cincinnati Dble. Housing Planer new '41 w/ 35 HP Vari speed drive & M. Gen. set 50 H.P.
EVEREADY-BPT., CONN. Box 638 ED 4-9471-2

Lou F. Kinderman

P. O. Box 182, Niles, Ohio OLympic 2-9876

FOR SALE
2—5 ton Morgan Charging Cranes, 52' span, 5 motors for bridge, trolley travel, hoist, tongs and turning; 230 volt DC.
1—Ladle Crane, Alliance 50 ton cap. main hook, 8 ton aux. hook, 4 motor, 4 girder, cab operated, 59'6" span, 230 volt DC.
1—1100 CFM, Ingersoll-Rand Air Compressor, 110#, 14" x 16" and 23" x 16" cylinders, motor driven, lubricator, exciter and accessories.
1—Crane Runway, 15 ton capacity, 685' long, crane 79'2" span, 35' floor to top of rail, crane 230 volt, DC.
2—Steel Frame Buildings, 79' wide x 320' long, with 5 ton crane and runway, full length, 20' floor to top of rail.

LEVELLERS

60" x ¼" Aetna-Standard, 17 Roll, 50 H.P. A.C. motor drive thru gearcase to universal couplings.
60" x ¼" Roll & Machine, 17 Roll, herring-bone gearing, 20 H.P. A.C. motor drive thru gearcase to universal couplings.
40" x 22 ga. United, 15 Rolls, 30 H.P. A.C. motor drive thru gearcase to universal couplings.

IN STOCK—IMMEDIATE DELIVERY

LANG MACHINERY COMPANY, INC.
28th St. & A.V.R.R. Pittsburgh 22, Pa.
GRant 1-3594

FOR SALE

RELAYING RAIL

200 TONS 112.25 LBS.

ANGLE BARS AND TIE PLATES TO MATCH.
$85.00 NET TON F.O.B. CHICAGO DISTRICT.
AVAILABLE FOR IMMEDIATE DELIVERY.

M. S. KAPLAN COMPANY
231 SO. LA SALLE ST., CHICAGO 4, ILL.
ANdover 3-3900

Keep 'em rolling . . . not rusting

FOR SALE

New—Used—Reconditioned railroad freight cars • car parts • locomotives • tank cars • steel storage tanks.

MARSHALL RAILWAY EQUIPMENT Corporation
328 Connell Building, Scranton 3, Pennsylvania
Diamond 3-1117 Cable MARAILQUIP

LIFTING MAGNETS

A complete magnet service. Magnets, new & rebuilt, generators, controllers, reels, etc.

Magnet specialists since 1910

Goodman Electric Machinery Co.
1060 Broad St. Newark 2, N. J.

R. R. EQUIPMENT

HOPPER TANK CABOOSES
FLATS GONDOLAS BOXES
AND SPECIAL DESIGNS

•

WE WILL REBUILD
TO YOUR SPECIFICATIONS
OR BUILD NEW
AS REQUIRED

•

RAIL & INDUSTRIAL EQUIPMENT CO., Inc.
30 CHURCH STREET
NEW YORK 7, N. Y.
PLANT: LANDISVILLE, PA.

FOR SALE

We can deliver immediately the following items n SAE 52100 rounds—all bearing quality —considerably under mill price—Quality guaranteed as to analysis and condition.

Size	Spec.	Weight
.155"/.159"	C.D.	6000#
.173"/.177"	C.D.	8800#
.176"/.180"	C.D.	9300#
.231"/.235"	C.D.	4000#
.234"/.238"	C.D.	16500#
.257"	C.D. C.G.	5500#
.629"/.643"	HR x Coil	8800#
.715"/.731"	HR x Coil	1200#
.747"/.754"	C.D.	22500#
.758"/.762"	C.D.	500#
.812"/.819"	C.D.	24000#
2⅛"	HR	1000#
3½"	HR M.S.	95,000#

We also carry many sizes in SAE 52100—bearing quality tubing—Write for stock list.

GLOBE TRADING CO.
1815 Franklin Street Detroit 7, Mich.
Woodward 1-8277

OVER 1,000 NEW AND USED MACHINE TOOLS IN STOCK
WRITE FOR LATEST STOCK LIST

MILES MACHINERY COMPANY
2941 EAST GENESEE • SAGINAW, MICH. PL. 2-3105

IMMEDIATELY AVAILABLE

Because of Mill Consolidation

3 LEE WILSON RECTANGULAR BELL-TYPE ANNEALING FURNACES,

atmosphere-controlled with 9 bases, are available. Each is approximately 7' x 7' x 14'. Excellent when used for manufacture of steel coils, they have a capacity of 50 tons per charge. These top-grade furnaces are still set up in the plant. Tremendous values specially priced for prompt sale.

NATIONAL MACHINERY EXCHANGE
126 Mott St. New York 13, N. Y.
CAnal 6-2470

MACHINES FOR YOUR YARD

American car pullers
Lorain 20 ton truck crane
Amer. 50B 3 drum hoist w/slewer
30"x20' Pioneer conveyor
4x10 Telsmith Vibro King d.d. screen
5x14 Telsmith Vibro King d.d. screen

TRACTOR & EQUIPMENT CO.
10006 Southwest Highway, Oak Lawn, Ill.

FOR SALE

15/16" Round — C.D. — Tyle 414
20,000# Available Under Mill Price

GLOBE TRADING COMPANY
1815 Franklin St., Detroit 7, Mich.
Woodward 1-8277

OFFERING

BRIDGE CRANES

ARNOLD HUGHES COMPANY
2765 PENOBSCOT BLDG. DETROIT, MICH.
WOodward 1-1894

FOR SALE

Wide Flange Beams, 150 tons, 36"x300#, 49-60' long. Plate, 200 tons, ½", ⅝", Mild Steel, 36x60" width, 8' long. Firebox Plate, A285, 100 tons, ¼"x72x240", ⅜"x96x360"; also available Beams, Angles, Columns, Rails all sizes. Plate A7, we offer 2000 tons imported your specifications ⅛" to 5" thick, up to 72 inches wide.

REPUBLIC SALES CORPORATION
70 E. 45th St., New York City MU 6-5675

No. 3 Niagara Angle Bending Roll, M.D.
100 KVA Thomson Spot Welder, 24" Throat.
55H Cochrane Bly 8" Cap. Hyd. Cold Saw.
#4 Cincinnati "Dual Power" Horiz. Mill, 30 HP.
No. ½, No. 1½ Buffalo Univ. Ironworkers, M.D.
600 Ton Southwark Hyd. Inclined Wheel Press 6' x ¼" Lown Initial Bending Roll, M.D.

FALK MACHINERY COMPANY
16 Ward St., Baker 5-5887, Rochester 5, N. Y.

WORLD'S LARGEST STOCK STAMPING PRESSES

SQUARING SHEARS • PRESS BRAKES
REBUILT *and* GUARANTEED

WILL LEASE WITH OPTION
TO PURCHASE, OR
WILL FINANCE OVER LONG TERM

JOSEPH **HYMAN** & SONS
TIOGA, LIVINGSTON & ALMOND STS.
PHILADELPHIA 34, PA. GArfield 3-8700

Tocco Induction Unit

Mfg. by Ohio Crankshaft. 110 HP —60 KW. Air Cooled—2 station. New 1943—A-1 Shape.

HORN GRINDING MACHINES CO.
3280 E. WOODBRIDGE ST.
DETROIT 7, MICHIGAN
LOrain 7-7115
"Little Joe" Horn

80 tons fabricated structural steel for industrial building 60 x 160 ft.

Designed with clear span for 5 ton overhead crane—60 ft. width—18 ft. 9 in. under truss. Flat roof. Complete, ready for erection, with architectural plans. F.O.B. trucks Philadelphia. Phone—NEbraska 4-8100.

Brunner & Lay—Eastern, Inc.
2514 E. Cumberland St., Philadelphia 25, Pa.

DIESEL ELEC. LOCOMOTIVES

3 New 25 Ton, 2 GE. 1 Whitcomb
3— 23 Ton, 2-45 Ton Used Gen Elec.
1— 44 Ton, 1-80 Ton Used Gen Elec.
1—100 Ton, Alcoa Used New 1955
3—100 Ton Gen Motors 600 HP Used

STANHOPE, 60 E. 42nd St., N. Y. 17, N. Y.

EQUIPMENT AND MATERIALS WANTED

WEISS STEEL CO. INC.

600 WEST JACKSON BLVD.
CHICAGO 6, ILLINOIS
Buyers of Surplus Steel Inventories
39 Years of Steel Service

WANTED

BRIDGE CRANES
ARNOLD HUGHES COMPANY
2765 PENOBSCOT BLDG. DETROIT, MICH.
WOodward 1-1894

WANTED TO PURCHASE

Metalworking or fabricating plant
REPLIES CONFIDENTIAL
Mr. W. B. WEISS, *President*
WEISS STEEL CO., INC.
600 W. Jackson Blvd., Chicago 6, Ill.

SURPLUS STEEL

NEW *WANTED* USED
Structurals, Plate, Pipe and Tubing
Consumers Steel & Supply Co.
P. O. Box 270, RACINE, WISCONSIN

WANTED SURPLUS STEEL

WALLACK BROTHERS
7400 S. Damon Ave. Chicago 36, Illinois
GROVEHILL 6-7474

EMPLOYMENT EXCHANGE

Works Manager—India

The manufacturer of steam generating, fuel burning and related equipment (licensee of Combustion Engineering, Inc.) is seeking a General Manager to operate a newly constructed and well equipped boiler manufacturing plant in Calcutta, India. An outstanding career opportunity for the right man, this position is both challenging and rewarding. It offers a salary in keeping with U. S. standards, a liberal contract and other benefits. The successful applicant will be a man who has a thorough knowledge of metal fabrication and machine shop operation as well as the ability to effectively direct the work of other people.

For further information, please write to
BOX G-934
It would be helpful if you enclosed a copy of your resume.

HELP WANTED

SALES ENGINEER

EXPANDING NATIONAL MANUFACTURER, A LEADER IN ITS FIELD OFFERS A CHALLENGING OPPORTUNITY FOR A SALES ENGINEER WITH BACKGROUND IN FERROUS FOUNDRY OPERATIONS. COMBINATION OF ENGINEERING DEGREE AND KNOWLEDGE OF CUPOLA OPERATIONS AND/OR STEEL MELTING DESIRABLE. FREE TO TRAVEL. AGE 25-40. SALARY WITH CONTINGENT BONUS, AUTOMOBILE, EXPENSES AND EXCELLENT FRINGE BENEFITS. REPLY IN CONFIDENCE, GIVING COMPLETE DETAILED HISTORY OF EDUCATION AND EXPERIENCE, WITH SALARY REQUIREMENTS TO

Box G-935
c/o The IRON AGE, Chestnut at 56th, Phila. 39

Metallurgical Engineer

for high carbon wire mill. Minimum three years' experience. Work involves manufacturing processes, problems and product responsibility. Will be in direct charge of junior engineer. **Address J. A. Turner, John A. Roebling's Sons Division, The Colorado Fuel and Iron Corporation, 640 So. Broad St., Trenton 2, N. J.** giving age, experience, education and salary requirements.

SITUATION WANTED

MANAGER-SUPERINTENDENT. Technical and practical knowledge of all phases of ferrous and nonferrous jobbing and production foundries. Metallurgical and sales background. 21 years as superintendent and manager. Good trouble shooter. Best of labor relations. Age 48.

BOX G-936
care The IRON AGE, Chestnut at 56th, Phila. 39

ADVERTISERS IN THIS ISSUE

An asterisk indicates that a booklet, or other information, is offered in the advertisement.

This index is published as a convenience. No liability is assumed for errors or omissions.

A

Acme-Newport Steel Co. 93
*Acme Steel Co. 113
Aetna-Standard, Div. Blaw-Knox Co. 10
*Allegheny Ludlum Steel Corp... 99
Alliance Machine Co. 12
*Amchem Products, Inc. 52
American Air Compressor Corp. 133
American Steel & Wire Div., United States Steel Corp. ... 37
Anaconda Aluminum Co. 34
*Armco Steel Corp. 6
Avondale Marine Ways Inc., Service Foundry Div. 74

B

Belyea Co., Inc. 133
Bertsch & Co. 136
Bethlehem Steel Co. 1
Blaw-Knox Co., Aetna-Standard Div. 10
Boynton, A. J., & Co. 136
Brunner & Lay-Eastern, Inc. 135
*Buell Engineering Co., Inc. ... 16
*Buffalo Forge Co. 109

C

Cleveland Crane & Engineering Co., Steelweld Machinery Div. 100
Columbia-Geneva Steel Div., United States Steel Corp. 37
Consumers Steel & Supply Co... 135
*Copperweld Steel Co., Aristoloy Steel Div., Inside Front Cover
*Crucible Steel Co. of America 4, 126-127
Cuyahoga Wrecking Co. 129

D

Dow Chemical Company ..24-25, 26
*Dreis & Krump Mfg. Co. 15
*Duraloy Co. 108

E

Eastern Machinery Co. 133
Erie Forge & Steel Corp. 35
Eveready Supply Corp. 134

F

Falk Machinery Co. 135
Foxboro Co. 78

G

Gisholt Machine Co. 131
Globe Trading Co. 134-135
Goodman Electric Machinery Co. 134
Goss & DeLeeuw Machine Co. .. 136
Great Lakes Steel Corp. 96-97

H

Henry, A. T., & Co. Inc. 133
Horn Grinding Machines Co..... 135
Hughes, Arnold, Co..... 135
Hyman, Joseph, & Sons 135

I

Illinois Tool Works 75
International Business Machines Corp. 64
*International Nickel Co., Inc... 27
Iron & Steel Products, Inc. 132

J

Jeffrey Mfg. Co. 119
Jones & Laughlin Steel Warehouse Div. 40

K

Kaplan, M. S., Co..... 134
Kinderman, Lou. F. 134

L

Lamson & Sessions Co. 5
Lang Machinery Co., Inc. 134
Latrobe Steel Co. 49
LaBlond, R. K., Machine Tool Co. 68
*Lodge & Shipley Co. 39

M

McLouth Steel Corp. 51
MacCabe, T. B., Co. 132
Mackintosh-Hemphill Div. E. W. Bliss Co. .....Back Cover
*MacWhyte Co. 66
*Malleable Castings Council ..20-21
Marshall Railway Equip. Corp. 134
Miles Machinery Co. 134
*Minnesota Mining & Mfg. Co., Adhesives, Coatings & Sealers Div. 104
Minster Machine Co. 36
Morrison Railway Supply Corp. 134
*Mundt, Chas., & Sons 129

N

*National Acme Co. 76-77
National Machinery Exchange .. 134
National Malleable & Steel Castings Co. 31
National Steel Corp. 96-97
National Tube Div., United States Steel Corp. 37
New Jersey Zinc Co. 63
*Niagara Blower Co. 94
Norton Co., Abrasive Grinding Wheel Div. 17-18

O

Ohio Steel Foundry Co. 72
Ornitz Equipment Corp. 133
*Osborn Mfg. Co., Brush Div... 98

P

Pittsburgh Engineering & Machine Div., Pittsburgh Steel Foundry Co., Textron, Inc. 71
*Precision Tube Co. 13

R

Rail & Industrial Equip. Co., Inc. 134
*Reliance Electric & Engineering Co. .....Inside Back Cover
Republic Sales Corp. 135
*Republic Steel Corp. 14, 28-29
Roebling's, John A., Sons Corp. 103, 135
Russell, Burdsall & Ward Bolt & Nut Co. 60
Ryerson, Jos. T., & Son, Inc. ... 110

S

SKF Industries, Inc. 8
Sciaky Bros. Inc. 19
Service Foundry, Div. of Avondale Marine Ways Inc. 74
*Snyder Corp. 54
Somers Brass Co., Inc. 11
Stanhope, R. C., Inc..... 135
Standard Oil Co. (Indiana) ..22-23
Standard Pressed Steel Co. 30
*Steelweld Div., Cleveland Crane & Engineering Co. ... 100
*Superior Tube Co. 32

T

Tennessee Coal & Iron Div., United States Steel Corp. 37
*Texaco Inc. 38
Timken Roller Bearing Co. 42
*Titan Metal Manufacturing Co., Div. Cerro De Pasco Corp. .. 66
*Townsend Co. 95
Tractor & Equipment Co. 134
*Trent Tube Co., Subsidiary of Crucible Steel Co. of America 4

U

United States Rubber Co., Mechanical Goods Div. 107
United States Steel Corp. 37
United States Steel Export Co. 37
United States Steel Supply—Steel Service Centers Div., United States Steel Corp. 37
Universal Machinery & Equipment Co. 134

W

Wallack Bros. 135
Ward Steel Co. 115
Wean Engineering Co., Inc. 33
Weiss Steel Co., Inc. 135
Weston Instruments Div., Daystrom, Inc. 56
Wheland Co. 115
Whisler Equipment Co. 133

CLASSIFIED SECTION

Clearing House 133-135
Contract Manufacturing Published in first and third issue of each month. See August 20 or September 3 issue.
Employment Exchange 135
Equipment & Materials Wanted. 135

INITIAL PINCH TYPE PLATE BENDING ROLL

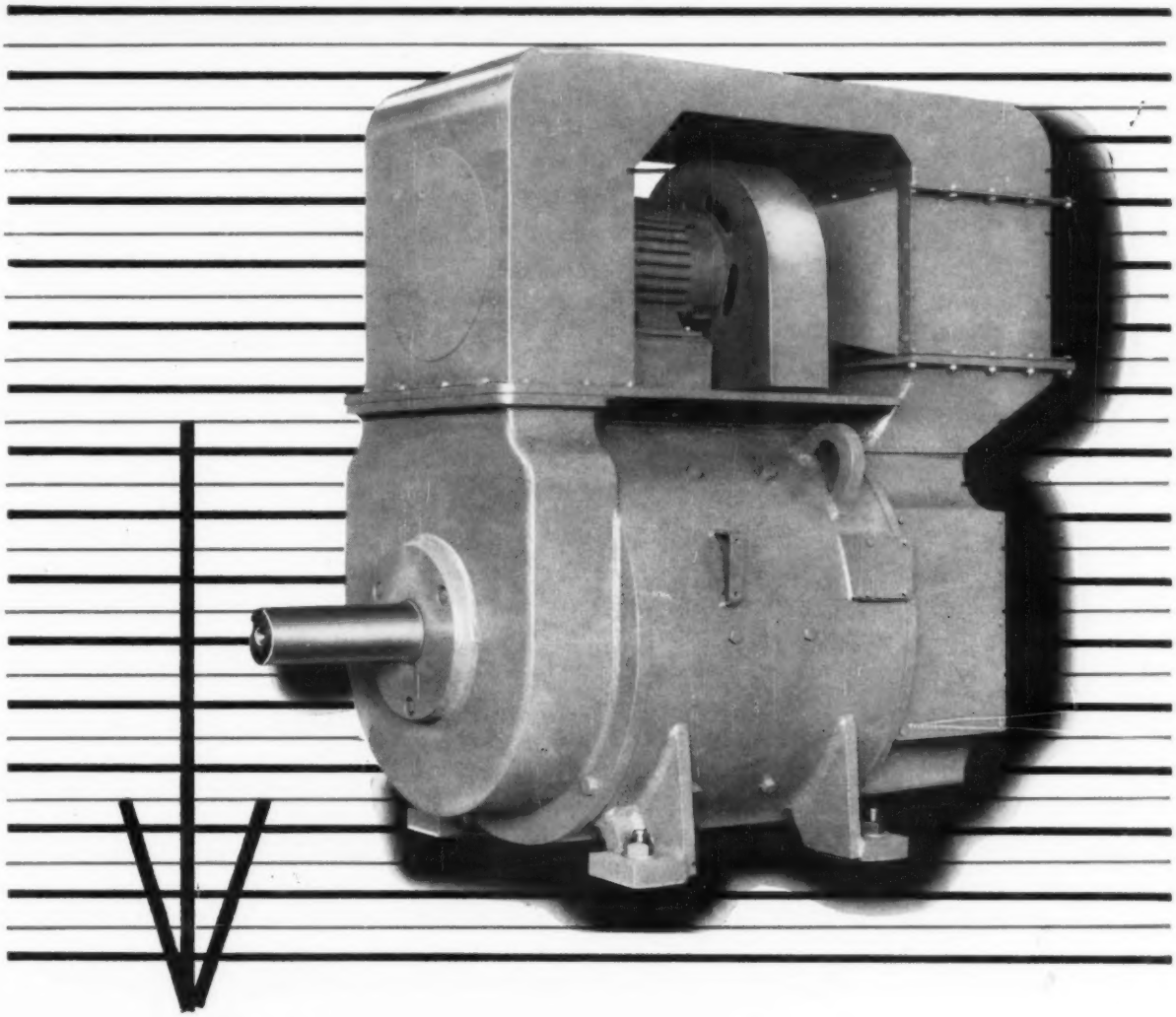
Capacity 1½" X 10'

Our Line
Light and heavy machinery for all classes of sheet metal, plate and structural work

BERTSCH & COMPANY, CAMBRIDGE CITY • INDIANA

GOSS and DE LEEUW
MULTIPLE SPINDLE
CHUCKING MACHINES
Tool Rotating
GOSS & DE LEEUW MACHINE CO., KENSINGTON, CONN.

A. J. BOYNTON AND CO.
CONSULTING ENGINEERS
109 N. Wabash Ave., Chicago 2, Ill.



NEW
Totally Enclosed D-c. Motor for LOW SPEED Operating Conditions

Heavy overloads, wide range of operating speeds, dusty atmospheres; that's where the new Super "T" Dual Cooled Motor stands out. It's an enclosed motor with better-than-open operating characteristics.

An independently powered fan pushes ventilating air through the motor and into a heat exchanger. A second fan blows cooling external air across the heat exchanger tubes. Constant ventilation is maintained without introducing outside air into the motor.

The Super "T" Dual Cooled Motor will not overheat even at very low operating speeds. The independent fan motor maintains constant ventilation regardless of the Super "T"s operating speed.

Write today for more information on this new totally enclosed d-c. motor. Available 10 thru 200 hp. C-1606

MASTER REEVES R

RELIANCE ELECTRIC AND ENGINEERING CO.

DEPT. 28A, CLEVELAND 17, OHIO

Canadian Division: Toronto, Ontario

Sales Offices and Distributors in principal cities

Mack-Hemp rolls are right for every mill

IN BLOOMING MILLS...

For resistance to side wear: Mack-Hemp *Superalloy* nickel-chrome-moly steel blooming mill rolls produce the tonnage in mills where side wear in the passes has been severe. Sets of *Superalloy* rolls have gone 900,000 tons and more to worn-out diameter!

Where firecracking is a serious problem: Mack-Hemp *Technalloy** chrome-moly steel rolls, specially heat treated, offer excellent resistance to firecracking and breakage under heavy operating conditions.

For average conditions: Heat-treated Mack-Hemp *Technisteel* carbon steel rolls provide excellent bite and good wear resistance at low initial cost.

Let us help you get exactly the right rolls for *your* blooming mills. And remember, roll service records show that *you get more tonnage from the rolls with the striped red wabblers.*

*A registered trademark—E. W. Bliss Company

MACKINTOSH-HEMPHILL DIVISION · PITTSBURGH-U.S.A.

BLISS

MACKINTOSH-HEMPHILL • DIVISION OF E. W. BLISS CO.

Pittsburgh and Midland, Pa.